Note remarks

Test sheet : KHD

Edition : 21.09.92

Replaces

Test oil : ISO-4113

Combination no. : D 401 840 754AA

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQV300...1150PA820

Governer no. : 0 421 813 561

Customer-spec. information

Customer : KHD

Engine : BF12L513C

1st version kW : 367.0

: 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina .

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9- 8- 5- 2Phasing : 0-15-60-75-120-135-

180-195-240-255-300-

315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 14.7...14.9

100 s: (14.4...15.1)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.0 2nd speed Rack travel in mm : 6.4...6.6

Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2)

cm3 : 0.4 Spread

100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.20...1.40 travel mm

rpm : 380 2nd speed

: 2.30...2.60 travel mm

3rd speed rpm : 800

travel mm : 5.20...5.50 rpm : 1200 4th speed

travel mm : 8.50...8.70

5th speed : 1280 rpm : 9.30...9.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1190 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 860

Del.quantity : 147.0...151.5)

Spread

cm3 : 4.00 1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 11.00

rpm : 1190 ... 1200 Speed

2nd rack travel in: 5.50

Speed rpm : 1260...1290 4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 81...89

Testina:

Speed rpm : 100 Minimum rack trave: 8.00 Speed : 300 COM

Rack travel in mm : 6.40 ... 6.60

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 12.00...12.10

2nd speed rpm : 650

Rack travel in m: 12.00...12.20

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed ron : 450 Pressure hPa : 860

: 12.00...12.10 Rack travel mm

Measurement

1/min: 450 Speed

1st pressure hPa : -

Rack travel in m: 10.60...10.80

2nd pressure hPa : 370

Rack travel in m: 11.70...11.80

3rd pressure hPa : 250

Rack travel in m: 10.90...11.10

START CUT-OUT

Speed

1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 450

Del.quantity cm3/: 108.0...112.0 1000 s: (105.5...114.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 135.0...165.0

1000 s: (131.0...169.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : KHD : 21.09.92 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 754AB

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQV300...1150PA820

Governer no. : 0 421 813 561

Customer-spec, information Customer : KHD

Engine : BF12L513C

1st version kW : 348.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9- 8- 5- 2Phasing : 0-15-60-75-120-135-180-195-240-255-300-

315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

EASIC SETTING

1st speed riom: 1150

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 13.7...13.9

100 s: (13.4...14.1)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0Rack travel in mm : 6.4...6.6 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2)

Spread cm3 : 0.4100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.20...1.40 travel mm

2nd speed rpm : 380

travel mm 2.30...2.60 : 800

3rd speed rpm

5.20...5.50 travel mm

4th speed

rpm : 1200 travel mm : 8.50...8.70

5th speed rpm : 1280

: 9.30...9.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 Speed rpm : 1190

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150 Aneroid pressure h: 800

: 137.0...139.0 Del.quantity

1000 : (134.5...141.5)

Spread

: 4.00 cm3

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 117...125

Testing:

1st rack travel in: 10.50

Speed rpm : 1190...1200

2nd rack travel in: 5.50

rom : 1260...1290 Speed

4th rack travel in: 1400

rpm : 0.00...1.00 Speed

LOW TOLE 1

Control lever

position degrees: 81...89

Testing:

: 100 Speed rpin

Minimum rack trave: 8.00 : 300 Speed LDW

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

rpm : 300...450 Speed

TORQUE CONTROL

Dimension a mm :-

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 11.50...11.60

2nd speed rpm : 650

Rack travel in m: 11.50...11.70

Ameroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 450

hPa : 800 Pressure Rack travel mm : 11.50...11.60

Measurement

Speed 1/min: 450

1st pressure hPa : -

Rack travel in m: 10.60...10.80

2nd pressure hPa : 300

Rack travel in m: 11.30...11.40

3rd pressure hPa : 235

Rack travel in m: 10.80...11.00

START CUT-OUT

Speed

1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 450 Del.quantity cm3/ : 108.0...112.0

1000 s: (105.5...114.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...165.0

1000 s: (131.0...169.0)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet

: KHD Edition : 21.09.92

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 754AC

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQV300...1150PA820

Governer no. : 0 421 813 561

Customer-spec. information

Customer : KHD

Engine : BF12L513C

1st version kW : 333.0

Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9- 8- 5- 211-10-3-6-7-12

Phasing

: 0-15-60-75-120-135-

180-195-240-255-300-

315

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 13.3...13.5

100 s: (13.0...13.7)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.0 2nd speed

Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.20...1.40 travel mm 2nd speed rpm : 380

travel mm : 2.30...2.60

3rd speed rpm : 800

5.20...5.50 travel mm

1200 4th speed rom :

: 8.50...8.70 travel mm

5th speed : 1280 rpm

: 9.30...9.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1190 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

Aneroid pressure h: 700

Del.quantity : 133.0...135.0

1000 : (130.5...137.5)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 10.20

Speed rpm : 1190...1200 2nd rack travet in: 5.50

rpm : 1250...1280 Speed

4th rack travel in: 1400

rpm : 0.00...1.00Speed

LOW IDLE 1

Control Lever

position degrees: 81...89

Testing:

Speed man : 100 Minimum rack trave: 8.00 : 300 Speed rpm

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 11.20...11.30

2nd speed rpm : 650

Rack travel in m: 11.20...11.40

Aneroid/Altitude Compensator Test

1st version

Settina

Speed rpm : 450 hPa : 700 Pressure

Rack travel mm : 11.20...11.30

Measurement

1/min: 450 Speed

1st pressure hPa : -

Rack travel in m: 10.60...10.80

2nd pressure hPa : 250

Rack travel in m: 11.00...11.10

3rd pressure hPa : 215

Rack travel in m: 10.70...10.90

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 450 Del.quantity cm3/ : 108.0...112.0 1000 s: (105.5...114.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 135.0...165.0

1000 s: (131.0...169.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : KHD

Edition : 21.09.92

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 754AD

Injection pump

Pump designation : PE12P110A920LS3173

: 0 411 810 708 EP type number

Governor

Governor design. : RQV300...1150PA820

Governer no. : 0 421 813 561

Customer-spec. information

Customer : KHD

Engine : BF12L5130

1st version kW : 330.0

Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 615

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9- 8- 5- 2-

Phasing : 0-15-60-75-120-135-

180-195-240-255-300-

315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm: 11.10...11.20

Del.quantity cm3/: 13.1...13.3

100 s: (12.8...13.5)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2)

cm3 : 0.4Spread

100 s: (0.7)

(3) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.20...1.40

2nd speed

rpm : 380 : 2.30...2.60 travel mm

3rd speed rpm : 800

travel mm : 5.20...5.50

4th speed rpm : 1200

: 8.50...8.70 travel mm:

5th speed rpm : 1280

travel mm : 9.30...9.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1190 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 700

Del.quantity : 131.0...133.0 1000 : (128.5...135.5) Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 10.10

Speed rpm : 1190...1200

2nd rack travel in: 5.50

rpm : 1250...1280 Speed

4th rack travel in: 1400

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 81...89

Testing:

Speed : 100 rpm -Minimum rack trave: 8.00

rpm : 300

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

rpm : 300...450 Speed

TORQUE CONTROL

Dimension a mm :-

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 11.10...11.20

2nd speed rpm : 650 Rack travel in m: 11.10...11.30

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 450 rom. hPa : 690 Pressure

Rack travel mm : 11.10...11.20

Measurement

1/min: 450 Speed

1st pressure hPa : -

Rack travel in m: 10.60...10.80

2nd pressure hPa : 250

Rack travel in m: 11.00...11.10

3rd pressure hPa : 215

Rack travel in m: 10.70...10.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 450 Del.quantity cm3/ : 108.0...112.0

1000 s: (105.5...114.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...165.0 1000 s: (131.0...169.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : KHD

Edition : 21.09.92

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 754AE

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQV300...1150PA820

: 0 421 813 561 Governer no.

Customer-spec. information

Customer : KHD

Engine : BF12L5130

1st version kW : 320.0

Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)
Rack travel in mm : 9.00...12.00

: 1- 4- 9- 8- 5- 2-Firing order

A09

Phasing : 0-15-60-75-120-135-

180-195-240-255-300-

315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 12.6...12.8

100 s: (12.3...13.0)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0 Rack travel in mm: 6.4...6.6

Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2) cm3 : 0.4 Spread

100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.20...1.40 travel mm

rpm : 380 2nd speed

: 2.30...2.60 travel mm

3rd speed rpm : 800

travel mm : 5.20...5.50

4th speed rpm : 1200

travel mm : 8.50...8.70

rpm : 1280 5th speed

travel mm : 9.30...9.60

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1

rpm : 1190 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

Del.quantity : 120.0...130.5)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 117...125

Testina:

1st rack travel in: 9.70

rpm : 1190...1200 Speed

2nd rack travel in: 5.50

Speed rpm : 1240...1270 4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 81...89

Testing:

Speed : 100 rpm Minimum rack trave: 8.00 rpm : 300

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

rpm : 300...450 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 10.70...10.80

2nd speed rpm : 650

Rack travel in m: 10.70...10.90

START CUT-OUT

Speed 1/min: 220 (240)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.70

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 135.0...165.0 1000 s: (131.0...169.0)

Remarks:

On activation of the starting solenoid, the start position must be reached.

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BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet

: KHD

Edition

: 21,09,92

Replaces

Test oil

: ISO-4113

Combination no. : 0 401 840 754AF

Injection pump

Pump designation : PE12P110A920LS3173

EP type number

: 0 411 810 708

Governor

Governor design. : RQV300...1150PA820

: 0 421 813 561

Governer no.

Customer-spec. information Customer

: KHD

Engine

: BF12L5130

1st version kW

: 300.0

Rated speed

: 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Opening

pressure, bar

: 172...175

Test lines

: 1 630 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00x1.50x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm

: 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order

: 1- 4- 9- 8- 5- 2-

A11

11- 10- 3- 6- 7- 12

Phasing

: 0-15-60-75-120-135-

180-195-240-255-300-

315

Tolerance + - *

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

Spread

rpm: 1150

Rack travel in mm : 10.30...10.40

Del.guantity cm3/: 11.6...11.8

100 s: (11.3...12.0)

cm3 : 0.4

100 s: (0.7)

rpm : 300.0

Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2)

Spread

2nd speed

cm3 : 0.4100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm

: 1.20...1.40

2nd speed

rom : 380 : 2.30...2.60

travel mm 3rd speed

rpm : 800

travel mm

: 5.20...5.50

4th speed travel mm

rpm : 1200

5th speed travel mm

: 1280 rpm

: 9.30...9.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1190

Rack travel in mm : 15.20...17.80

: 8.50...8.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed

Del.quantity

rpm : 1150

: 116.0...118.0

1000 : (113.5...120.5)

Spread

cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control Lever

position degrees: 117...125

Testing:

1st rack travel in: 9.30

Speed rpm : 1190...1200

2nd rack travel in: 5.50

Speed rpm : 1140...1170

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 81...89

Testing:

Speed rpm : 100

Minimum rack trave: 8.00

Speed rpm: 300

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 10.30...10.40

2nd speed rpm : 650

Rack travel in m: 10.30...10.50

START CUT-OUT

Speed 1/min: 220 (240)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity cm3/: 135.0...165.0

1000 s: (131.0...169.0)

Remarks:

G. 1(5)

On activation of the starting solenoid, the start position must be reached.

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BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD

Edition : 21.09.92

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 754AG

Injection pump

Pump designation: PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQV300...1150PA820

Governer no. : 0 421 813 561

Customer-spec, information Customer : KHD

Engine : BF12L513C

: 324.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-4-9-8-5-2-

11- 10- 3- 6- 7- 12

: 0-15-60-75-120-135-Phasing

180-195-240-255-300-

315

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 1

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 12.9...13.1

100 s: (12.6...13.3)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.0 2nd speed

Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2)

Spread cm3 : 0.4100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.20...1.40 travel mm

2nd speed 380 LDW

2.30...2.60 travel mm

3rd speed rpm : 800

: 5.20...5.50 travel mm

4th speed rpm : 1200

travel mm : 8.50...8.70

5th speed rpm : 1280

: 9.30...9.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1190 Speed

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 129.0...131.0

1000 : (126.5...133.5)

Spread

cm3: 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 117...125

Testing:

1st rack travel in: 10.00

Speed rpm : 1190...1200

2nd rack travel in: 5.50

rpm : 1250...1280 Speed

4th rack travel in: 1400 Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 81...89

Testina:

Speed : 100 mom

Minimum rack trave: 8.00

Speed : 300 non

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 11.00...11.10

2nd speed rpm : 650

Rack travel in m: 11.00...11.20

START CUT-OUT

Speed 1/min: 220 (240)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 135.0...165.0 1000 s: (131.0...169.0)

Remarks:

•

On activation of the starting solenoid, the start position must be reached.

A14

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 7559A

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQV750PA823 : 0 421 813 573 Governer no.

Customer-spec. information Customer : KHD

Engine : BF12L513C

1st version kW : 276.0 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1- 4- 9- 8- 5- 2-Firing order

Phasing : 0-15-60-75-120-135-: 21.09.92

180-195-240-255-300-

11-10-3-6-7-12

315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm: 12.00...12.10

Del.quantity cm3/: 14.7...14.9

100 s: (14.4...15.1)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.3)

Spread cm3 : 0.4100 s: (0.7)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Del.quantity : 147.0...149.0

1000 : (144.5...151.5)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 86...94

Testing:

1st rack travel in: 11.00 rpm : 748...753 Speed 2nd rack travel in: 5.50 rpm : 780...787 Speed 4th rack travel in: 820

rpm : 0.00...1.00 Speed

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00 Speed rpm : 748...753

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Note remarks

Test sheet : KHD

Edition : 31.08.92

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 755AB

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 702

Governor

Governor design. : RQV750PA823 : 0 421 813 573 Governer no.

Customer-spec. information Customer : KHD

Engine : BF12L513

1st version kW : 255.0 : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1,50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9- 8- 5- 2-

A17

Phasing : 0-15-60-75-120-135-180-195-240-255-300-

315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 12.5...12.7

100 s: (12.2...12.9)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0Rack travel in mm: 6.6...6.8

Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.3)

Spread cm3 : 0.4

100 s: (0.7)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 125.0...127.0 Del.quantity

1000 : (122.5...129.5)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version

Control Lever

position degrees: 86...94

Testing:

1st rack travel in: 10.00

rpm : 750...755 Speed 2nd rack travel in: 5.50

rpm : 775...782 Speed

4th rack travel in: 820

rom : 0.00...1.00Speed

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00 Speed rpm : 750...755 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD

Edition : 31.08.92

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 755AC

Injection pump

Pump designation: PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQV750PA823 : 0 421 813 573 Governer no.

Customer-spec, information

Customer : KHD

Engine : BF12L513

1st version kW : 232.0

: 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.COX1.5GX600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1- 4- 9- 8- 5- 2-Firing order

11- 10- 3- 6- 7- 12

Phasing : 0-15-60-75-120-135-

180-195-240-255-300-

315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 12.5...12.7

100 s: (12.2...12.9)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.0 2nd speed

Rack travel in mm : 6.6...6.8

Del.quantity cm3/: 1.5...2.1

100 s: (1.2...2.3) Spread

cm3 : 0.4100 s: (0.7)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 125.0...127.0

1000 : (122.5...129.5)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version

Testing:

1st rack travel in: 10.00

rpm : 750...755 Speed

2nd rack travel in: 5.50

Speed rpm : 775...782

4th rack travel in: 820

rpm : 0.00...1.00Speed

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

:

On activation of the starting solenoid, the start position must be reached.

APPLICATION

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD

Edition : 31.08.92

Replaces : -

Test oil : ISO-4113

Combination no. : 0 401 840 755AD

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQV75DPA823 Governer no. : 0 421 813 573

Customer-spec. information Customer : KHD

Engine : BF12L513

1st version kW : 228.0 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-4-9-8-5-2-

11- 10- 3- 6- 7- 12

Phasing : 0-15-60-75-120-135-

180-195-240-255-300-

315

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 10.30...10.40

Del.quantity cm3/: 10.9...11.1

100 s: (10.6...11.3)

Spread cm3: 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.6...6.8 Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm3: 0.4

100 s: (0.7)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700

Del.quantity : 109.0...111.0

1000 : (106.5...113.5) Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Testing:

1st rack travel in: 9.30

Speed rpm : 750...755

2nd rack travel in: 5.50

Speed rpm : 773...780

4th rack travel in: 820

Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30

rpm : 750...755 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Note remarks

Test sheet : KHD

Edition : 31.08.92

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 755AE

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQV750PA823 : 0 421 813 573 Governer no.

Customer-spec. information Customer : KHD

Engine : BF12L513

1st version kW : 206.0 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95) Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9- 8- 5- 2: 0-15-60-75-120-135-180-195-240-255-300-

315

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 1

BASIC SETTING

Phasing

1st speed rpm: 700

Rack travel in mm: 10.30...10.40

Del.quantity cm3/: 10.9...11.1

100 s: (10.6...11.3)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.0 2nd speed Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 1.5...2.1

100 s: (1.2...2.3)

cm3 : 0.4Spread

100 s: (0.7)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 109.0...111.0 1000 : (106.5...113.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Testing:

1st rack travel in: 9.30 rpm : 750...755 Speed

2nd rack travel in: 5.50

Speed rpm : 773...780

4th rack travel in: 820

rom : 0.00...1.00Speed

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

: 0-15-60-75-120-135-

180-195-240-255-300-

Note remarks

Test sheet : KHD

Edition : 21.09.92

Replaces : -

Test oil : ISO-4113

Combination no. : 0 401 840 763AA

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQ300/1000PA803-1

Governer no. : 0 421 801 463

Customer-spec. information

Customer : KHD

Engine : BF12L5130

1st version kW : 342.0

Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1,50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-4-9-8-5-2-

Time to cyl. no. :1

Tolerance + - *

Phasing

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 14.9...15.1

1G0 s: (14.6...15.3)

315

: 0.50 (0.75)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0 Rack travel in mm : 6.8...7.0

Del.quantity cm3/: 1.5...2.1

100 s: (1.2...2.3) Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm: 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 900

Del.quantity : 149.0...151.0 1000 : (146.5...153.5

1000 : (146.5...153.5) cm3 : 4.00

1000

1000 : (7.50)

RATED SPEED

Spread

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.00

Speed rpm : 1035...1050

2nd rack travel in: 5.50

Speed rpm : 1070...1100

4th rack travel in: 1200

rpm : 0.00...1.00 Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 6.9

Testing:

Speed rpm : 100 Minimum rack trave: 8.40 rpm : 300 Speed

Rack travel in mm : 6.80...7.00

Rack travel in mm : 2.00

rpm : 340...380 Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.00

Speed rom : 1035...1050

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...165.0

1000 s: (131.0...169.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 6.80...7.00 Del.quantity cm3/: 15.0...21.0 1000 s: (12.5...23.5) Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

APPLICATION

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD

Edition : 21.09.92

Replaces : -

Test oil : ISO-4113

Combination no. : 0 401 840 763AB

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQ300/1000PA803-1

Governer no. : 0 421 801 463

Customer—spec. information Customer : KHD

Engine : BF12L5130

agne . Brizzio

1st version kW : 311.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Preströke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-4-9-8-5-2-

11-10-3-6-7-12

Phasing : 0-15-60-75-120-135-

180-195-240-255-300-

315

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 14.9...15.1

100 s: (14.6...15.3)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed irpm: 300.0

Rack travel in mm : 6.8...7.0

Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.3)

Spread cm3: 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm: 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 900

Del.quantity : 149.0...151.0

1000 : (146.5...153.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.00

Speed rpm : 1035...1050

2nd rack travel in: 5.50

Speed rpm : 1070...1100

4th rack travel in: 1200 Speed rpm : 0.00...1.00LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 6.9 Speed Testing: Speed rpm : 100 Minimum rack trave: 8.40 Speed rpm : 300 Rack travel in mm : 6.80...7.00 Rack travel in mm: 2.00 Speed rom : 340...380 TORQUE CONTROL 2nd speed rpm : 650 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.00 Speed rpm : 1035...1050 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 135.0...165.0 1000 s: (131.0...169.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 6.80...7.00 Del.quantity cm3/: 15.0...21.0 1000 s: (12.5...23.5) Spread cm3 : 4.50 1000 s: (7.50) Remarks:

APPLICATION

BOSCH INJ. PLMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD

Edition : 21.09.92

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 840 763AC

Injection numb

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQ300/1000PA803-1

: 0 421 801 463 Governer no.

Customer-spec. information

Customer : KHD

Engine : BF12L513C

1st version kW : 272.0

Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm ; 9.00...12.00

Firing order : 1- 4- 9- 8- 5- 2-

B01

11- 10- 3- 6- 7- 12

Phasing : 0-15-60-75-120-135-

180-195-240-255-300-

315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 12.6...12.8

100 s: (12.3...13.0)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.02nd speed

Rack travel in mm: 6.8...7.0

Del.quantity cm3/: 1.5..2.1

100 s: (1.2...2.3) cm3 : 0.4

Spread 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

: 126.0...128.0 Del.quantity

1000 : (123.5...130.5)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.10

rpm : 1035...1050 Speed

2nd rack travel in: 5.50

: 1060...1090 Speed rpm

4th rack travel in: 1200

rpm : 8.00...1.00 Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 6.9

Testing:

Speed rpm : 100 Minimum rack trave: 8.40 Speed 70m : 300

Rack travel in mm : 6.80...7.00

Rack travel in mm: 2.00

rpm : 340...380 Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1035...1050

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...165.0 1000 s: (131.0...169.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 6.80...7.00 Del.quantity cm3/: 15.0...21.0 1000 s: (12.5...23.5)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

APPLICATION

BOSCH IN! PUMP TEST SPECIFICATIONS

11-10-3-6-7-12

Note remarks

Test sheet : KHD

Edition : 21.09.92

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 763AD

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQ300/1000PA803-1

: 0 421 801 463 Governer no.

Customer-spec. information Customer : KHD

Engine : BF12L513C

1st version kW : 263.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values ___

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9- 8- 5- 2-

Phasing : 0-15-60-75-120-135-

180-195-240-255-300-

315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 14.9...15.1

100 s: (14.6...15.3)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm: 6.8...7.0 Deliquantity cm3/: 1.5...2.1

100 s: (1.2...2.3)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-Lever position Degree: -1

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 149.0...151.0

1000 : (146.5...153.5)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 20.0

Testina:

1st rack travel in: 11.00

Speed rpm : 1035...1050

2nd rack travel in: 5.50

Speed rpm : 1070...1100 4th rack travel in: 1200

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 6.9

Testing:

Speed rpm : 100 Minimum rack trave: 8.40 Speed rpm : 390

Rack travel in mm : 6.80...7.00

Rack travel in mm : 2.00

Speed rpm : 340...380

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1035...1050

STARTING FUEL DELIVERY

: 100 Speed man

Del.quantity cm3/: 135.0...165.0 1000 s: (131.0...169.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 6.80...7.00 Del.quantity cm3/: 15.0...21.0 1000 s: (12.5...23.5)

cm3 : 4.50 Spread

1000 s: (7.50)

Remarks:

APPLICATION

EOSCH INJ. PUMP TEST SPECIFICATIONS

11- 10- 3- 6- 7- 12

Note remarks

Test sheet

: KHD

Edition

: 21.09.92

Replaces

Test oil

: ISO-4113

Combination no.

: 0 401 840 763AE

injection nump

Pump designation : PE12P110A920LS3173

EP type number

: 0 411 810 708

Governor

Governor design. : RQ300/1000PA803-1

Governer no.

: 0 421 801 463

Customer

Customer-spec. information : KHD

Engine

: BF12L513

1st version kW

: 232.0

Rated speed

: 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Opening

pressure, bar

: 172...175

Test Lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Prestroke mm

: 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order

: 1- 4- 9- 8- 5- 2-

B05

Phasing

: 0-15-60-75-120-135-

180-195-240-255-300-

315

Tolerance + - *

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 750

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 12.5...12.7

100 s: (12.2...12.9)

Spread

cm3 : 0.4

100 s: (0.7)

rpm : 300.0

Rack travel in mm: 6.8...7.0 Del.quaritity cm3/: 1.5...2.1

100 s: (1.2...2.3)

Spread

2nd speed

cm3 : 0.4100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 750

Del.quantity 1000

: 125.0...127.0 : (122.5...129.5)

Spread

: 4.00

cm3 1000 : (7.50)

RATED SPEED

1st version

Setting point: Speed

Testing:

Speed

Speed

rpm

: 600

Rack travel in mm: 20.0

1st rack travel in: 10.00

rpm : 1040...1050

rom

2nd rack travel in: 5.50

: 1065...1095

4th rack travel in: 1200 rpm : 0.00...1.00 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 6.9 Testing: rpm : 100 Speed Minimum rack trave: 8.40 : 300 Speed man Rack travel in mm : 6.80...7.00 Rack travel in mm: 2.00 Speed rom : 340...380 TCRGUE CONTROL Dimension a mm : 0.20 Torque control curve - 1st version 1st speed rpm : 750 Rack travel in m: 11.00...11.10 2nd speed npm : 650 Rack travel in m: 11.30...11.50 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.00 rpm : 1040...1050 Speed STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 135.0...165.0 1000 s: (131.0...169.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 6.80...7.00 Del.quantity cm3/: 15.0...21.0 1000 s: (12.5...23.5) Spread cm3 : 4.501000 s: (7.50) Remarks: **APPLICATION** Generator set

Note remarks

Test sheet : KHO

Edition : 21.09.92

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 763AF

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQ300/1000PA803-1

: 0 421 801 465 Governer no.

Customer-spec. information

Customer : KHD

Engine : BF12L513

1st version kW : 220.0

Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : D 681 343 009

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1- 4- 9- 8- 5- 2-Firing order

807

Phasing : 0-15-60-75-120-135-

180-195-240-255-300-

315

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 10.60...10.70

Del.quantity cm3/: 11.6...11.8

100 s: (11.3...12.0)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm: 6.8...7.0 Del.quantity cm3/: 1.5...2.1

100 s: (1.2...2.3)

cm3 : 0.4 Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 116.0...118.0

1000 : (113.5...120.5)

Spread cm3 : 4.00

: (7.50) 1000

RATED SPEED

1st version

Setting point:

Speed rpm

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.60

rpm : 1040...1050 Speed

2nd rack travel in: 5.50

rpm : 1060...1090 Speed

4th rack travel in: 1200

rom : 0.00...1.00 Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 6.9

Testing:

Speed rpm : 100 Minimum rack trave: 8.40 : 300 Speed rpia

Rack travel in mm : 6.80...7.00

Rack travel in mm : 2.00 Speed rom : 340...380

TORQUE CONTROL

Dimension a mn : 0.20

Torque control curve - 1st version

rpm : 750 1st speed

Rack travel in m: 10.60...10.70

rpm : 650 2nd speed

Rack travel in m: 10.90...11.10

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.60

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...165.0 1000 s: (131.0...169.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 6.80...7.00 Del.quantity cm3/: 15.0...21.0 1000 s: (12.5...23.5)

cm3 : 4.50 Spread

1000 s: (7.50)

Remarks:

APPLICATION

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD

Edition : 21.09.92

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 763AG

Injection pump

Pump designation: PE12P110A920LS3173

: 0 411 810 708 EP type number

Governor

Governor design. : RQ300/1000PA803-1

: 0 421 801 463 Governer no.

Customer-spec. information

Customer : KHD

Engine : 3F12L513

1st version kW : 215.0

Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-4-9-8-5-2-

11- 10- 3- 6- 7- 12

Phasing : 0-15-60-75-120-135-

180-195-240-255-300-

315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 11.4...11.6

100 s: (11.1...11.8)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.0 2nd speed

Rack travel in mm: 6.8...7.0 Del.quantity cm3/: 1.5...2.1

100 s: (1.2...2.3)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 114.0...116.0

1000 : (111.5.../118.5)

Spread

cm3 : 4.00 1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm

Rack travel in mm: 20.0

Testing:

1st rack travel in: 9.50

Speed rpm : 1040...1050

2nd rack travel in: 5.50

: 1060...1090 Speed rom

4th rack travel in: 1200 Speed rpm : 0.00...1.00 LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.9 Testing: Speed rpm : 100 Minimum rack trave: 8.40 mom : 300 Speed Rack travel in mm : 6.80...7.00 Rack travel in mm : 2.00 : 340...380 Speed man. TORQUE CONTROL Dimension a mm : 0.20 Torque control curve - 1st version rpm : 750 1st speed Rack travel in m: 10.50...10.60 2nd speed rpm : 650 Rack travel in m: 10.80...11.00 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.50 Speed rpm : 1040...1050 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 135.0...165.0 1000 s: (137.0...169.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 6.80...7.00 Del.quantity cm3/: 15.0...21.0 1000 s: (12.5...23.5)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD

Edition : 21.09.92

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 763AH

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQ300/1000PA803-1

: O 421 801 463 Governer no.

Customer-spec. information

Customer : KHD

Engine : BF12L513

1st version kW : 206.0

Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. "C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1- 4- 9- 8- 5- 2-Firing order

Phasing : 0-15-60-75-120-135-180-195-240-255-300-

315

11-10-3-6-7-12

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 10.30...10.40

Del.quantity cm3/: 10.9...11.1

100 s: (10.6...11.3)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.8...7.0

Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.3)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

: 109.0...111.0 Del.quantity 1000 : (106.5...113.5)

Spread cm3 : 4.00

1000 : (7,50)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 20.0

Testing:

1st rack travel in: 9.30

rpm : 1040...1050 Speed

2nd rack travel in: 5.50

Speed : 1055...1085 rpm

4th rack travel in: 1200

rpm : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm: 6.9

Testing:

Speed rpm : 100 Minimum rack trave: 8.40

Speed rpm : 300
Rack travel in mm : 6.80...7.00
Rack travel in mm : 2.00 Speed rpm : 340...380

TURQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 750

Rack travel in m: 10.30...10.40

2nd speed rpm : 650

Rack travel in m: 10.60...10.80

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.30

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...165.0 1000 s: (131.0...169.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.80...7.00
Del.quantity cm3/ : 15.0...21.0 1000 s: (12.5...23.5)

cm3 : 4.50 Spread

1000 s: (7.50)

Remarks:

APPLICATION

Generator set

Test sheet : KHD

Edition : 31.08.92

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 764AA

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQV300...1150PA820-1

Governer no. : 0 421 813 727

Customer-spec, information

Customer : KHD

Engine : EF12L513

: 334.0 1st version kW Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9- 8- 5- 2-

B13

Phasing : 0-15-60-75-120-135-

180-195-240-255-300-

315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 13.0...13.2

100 s: (12.7...13.4)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0 Rack travel in mm: 6.6...6.8

Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2) cm3 : 0.4Spread

100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.10...1.40 travel mm;

rpm : 450 2nd speed

travel mm 2.80...3.20

rpm : 750 3rd speed

: 4.90...5.30 travel mm

rpm : 1200 4th speed

travel mm : 8.40...8.60

rpm : 13005th speed

: 9.40...9.80 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1190 Speed

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 980

Del.quantity : 130.0...132.0

1000 : (127.5...134.5)

cm3 : 4.00 Spread 1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 119...127

Testing:

1st rack travel in: 10.30

rpm : 1190...1200 Speed

2nd rack travel in: 5.50

rpm : 1260...1290 Speed

4th rack travel in: 1400

Speed man : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 85...93

Testina:

Speed : 100 nom Minimum rack trave: 8.20 rpm : 300

Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

rpm : 300...510 Speed

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed

st speed rpm : 1150 Rack travel in m: 11.30...11.40

2nd speed rpm : 650

Rack travel in m: 11.30...11.50

Aneroid/Altitude Compensator Test

1st version

Setting

: 450 Speed mon: Pressure hPa : 980

Rack travel mm : 11.30...11.40

Measurement

1/min: 450 Speed

1st pressure hPa : -

Rack travel in m: 10.40...10.60

2nd pressure hPa : 480

Rack travel in m: 11.10...11.20 3rd pressure hPa : 425

Rack travel in m: 10.60...10.80

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 450
Del.quantity cm3/: 108.0...112.0
1000 s: (105.5...114.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...160.0

1000 s: (136.0...164.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

Test sheet : KHD

Edition : 31.08.92

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 764AB

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQV300...1150PA820-1

Governer no. : 0 421 813 727

Customer-spec. information Customer : KHD

Engine : BF12L513

1st version kW : 323.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 2.80...2.90 Prestroke mm

: (2.75...2.95)
Rack travel in mm : 9.00...12.00

: 1- 4- 9- 8- 5- 2firing order

Phasing : 0-15-60-75-120-135-180-195-240-255-300-315

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 12.5...12.7

100 s: (12.2...12.9)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.02nd speed

Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2)

Spread cm3 : 0.4100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.10...1.40 travel nm

2nd speed rpm : 450

travel mm : 2.80...3.20 3rd speed rpm : 750

travel mm : 4.90...5.30

4th speed rpm : 1200

travel mm

: 8.40...8.60

5th speed rpm : 1300

travel mm : 9.40...9.80

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm : 1190

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

Aneroid pressure h: 950

Del.quantity : 125.0...127.0

1000 : (122.5...129.5)

Spread cm3 : 4.001000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 119...127

Testing:

1st rack travel in: 10.10

Speed rpm : 1190...1200

2nd rack travel in: 5.50

rpm : 1260...1290 Speed

4th rack travel in: 1400

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 85...93

Testina:

Speed rom : 100 Minimum rack trave: 8.20 Speed rom : 300

Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

rpm : 300...510 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 11.10...11.20

2nd speed rpm : 650

Rack travel in m: 11.10...11.30

Aneroid/Altitude

Compensator Test

1st version

Setting

: 450 Speed mom Pressure hPa : 950

Rack travel mm : 11.10...11.20

Measurement

1/min: 450 Speed

1st pressure hPa : -

Rack travel in m: 10.40...10.60

2nd pressure hPa : 455

Rack travel in m: 10.90...11.00

3rd pressure hPa : 410

Rack travel in m: 10.50...10.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 450 Speed

Del.quantity cm3/: 108.0...112.0

1000 s: (105.5...114.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.8)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

Test sheet : KHD

Edition : 31.08.92

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 764AC

Injection pump

Pump designation : PE12P110A920LS3173

: 0 411 810 708 EP type number

Governor

Governor design. : RQV300...1150PA820-1

Governer no. : 0 421 813 727

Customer-spec, information Customer : KHD

Engine : BF12L513

1st version kW : 316.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9- 8- 5- 2-

Phasing : 0-15-60-75-120-135-

180-195-240-255-300-

315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 12.2...12.4

100 s: (11.9...12.6)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.6...6.8 Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.2)

cm3 : 0.4Spread

100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.40

2nd speed rpm : 450

: 2.80...3.20 rpm : 750 travel mm

3rd speed

: 4.90...5.30 travel mm

4th speed rpm : 1200

travel mm : 8.40...8.60

5th speed rpm : 1300

travel mm : 9.40...9.80

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1190 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150 Aneroid pressure h: 900

: 122.0...124.0 Del.quantity

1000 : (119.5...126.5)

: 4.00 Spread cm3 1000 : (7.50)

RATED SPEED

1st version Control Lever

position degrees: 119...127

Testing:

1st rack travel in: 9.90

rpm : 1190...1200 Speed

2nd rack travel in: 5.50

rpm : 1260...1290 Speed

4th rack travel in: 1400

Speed rpm : 0.00...1.03

LOW IDLE 1 Control lever

position degrees: 85...93

Testing:

Speed : 100 rpm Minimum rack trave: 8.20 : 300 Speed MC

Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

rpm : 300...510 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 10.90...11.00

2nd speed rpm : 650

Rack travel in m: 10.90...11.10

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 450 rpm -Pressure hPa : 900

: 10.90...11.00 Rack travel mm

Measurement

1/min: 450 Speed

1st pressure hPa : -

Rack travel in m: 10.40...10.60

2nd pressure hPa : 440

Rack travel in m: 10.80...10.90

3rd pressure hPa : 410

Rack travel in m: 10.50...10.70

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 450 Speed

Del.quantity cm3/: 108.0...112.0

1000 s: (105.5...114.5)

BREAKAWAY

1st version

imm rack travel less than

full load rack tr: 9.90

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0

1000 s: (136.0...164.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

Test sheet : KHD

Edition : 31.08.92

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 764AD

Injection pump

Pump designation: PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQV300...1150PA820-1

Governer no. : 0 421 813 727

Customer-spec. information

Customer : KHD

Engine : BF12L513

1st version kW : 302.0

Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-4-9-8-5-2

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Phasing : 0-15-60-75-120-135-

180-195-240-255-300-

315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 11.7...11.9

100 s: (11.4...12.1)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.0 2nd speed

Rack travel in mm : 6.6...6.8

Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.2)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

ist speed rpm : 300

: 1.10...1.40 travel mm

rom : 450 2nd speed

travel mm : 2.80...3.20

3rd speed rpm : 750

travel mm : 4.90...5.30

4th speed 1200 rom

: 8.40...8.60 travel mm

5th speed rpm : 1300

: 9.40...9.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1190 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1150

Del quantity : 117.0...119.0

1000 : (114.5...121.5)

Spread

cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control Lever

position degrees: 119...127

Testina:

1st rack travel in: 9.50

Speed rpm : 1190...1200

2nd rack travel in: 5.50

Speed rpm : 1255...1285

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 85...93

Testing:

Speed rpm : 100

Minimum rack trave: 8.20

Speed rpm : 300 Rack travel in mm : 6.60...6.30

CONSTANT REGULATION

Speed rpm : 300...510

TORQUE CONTROL

Dimension a mm :-

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 10.50...10.60

2nd speed rpm : 650

Rack travel in m: 10.50...10./0

START CUT-OUT

Speed 1/min: 220 (240)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.50

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity cm3/: 140.0...160.0

1000 s: (136.0...164.0)

Remarks:

On activation of the starting solenoid, the start position must be reached.

B20

Test sheet : KHD

: 31.08.92 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 764AE

Injection pump

Pump designation : PE12P110A920LS3173

: 0 411 810 708 EP type number

Governor

Governor design. : RQV300...1150PA820-1

Governer no. : 0 421 813 727

Customer-spec. information

Customer : KHD

Engine : BF12L513

: 290.0 1st version kW

: 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Cverflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 2.80...2.90 Prestroke mm

: (2.75...2.95) Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9- 8- 5- 2Phasing : 0-15-60-75-120-135-

180-195-240-255-300-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 10.20...10.30

Del.guantity cm3/: 11.0...11.2

100 s: (10.7...11.4)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 300.02rd speed

Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.10...1.40 travel mm

2nd speed rpm : 450

: 2.80...3.20 travel mm

rpm : 750 3rd speed travel mm

: 4.90...5.30

rpm : 1200 4th speed

travel mm : 8.40...8.60

5th speed : 1300 mari

: 9.40...9.80 travel mm

GUIDE SLEEVE FOSITION Control-lever position

Dearee: -1

rpm : 1190 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 1150

: 110.0...112.0 Del.quantity

1000 : (107.5...114.5)

Spread

cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 119...127

Testing:

1st rack travel in: 9.20

Speed rpm : 1190...1200

2nd rack travel in: 5.50

Speed rpm : 1250...1280

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 85...93

Testing:

Speed rpm : 100

Minimum rack trave: 8.20 Speed rpm : 300

Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

Speed rpm : 300...510

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 10.20...10.30

2nd speed rpm : 650

Rack travel in in: 10.20...10.40

START CUT-OUT

Speed 1/min: 220 (240)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...160.0

1000 s: (136.0...164.0)

Remarks:

:

On activation of the starting solenoid, the start position must be reached.

B22

Test sheet : KHD

Edition : 31.08.92

Replaces Test oil : ISO-4113

Combination no. : 0 401 840 764AF

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQV300...1150PA820-1

Governer no. : 0 421 813 727

Customer-spec, information Customer : KHD

Engine : BF12L513

1st version kW : 278.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9- 8- 5- 2Phasing

: 0-15-60-75-120-135-

180-195-240-255-300-

315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 9.80...9.90

Del.quantity cm3/: 10.4...10.6

100 s: (10.1...10.8)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.0 2nd speed

Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.10...1.40 travel mm

2nd speed rpm : 450

: 2.80...3.20 travel mm

rpm : 750 3rd speed travel mm

: 4.90...5.30

rpm : 1200 4th speed

: 8.40...8.60 travel mm

5th speed rpm : 1300

travel mm : 9.40...9.80

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1190 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 104.0...106.0

1000 : (101.5...108.5)

Spread

cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 119...127

Testira:

1st rack travel in: 8.80

Speed rpm : 1190...1200 2nd rack travel in: 5.50 Speed rpm : 1245...1275

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 85...93

Testina:

Speed rpm : 100

Minimum rack trave: 8.20

Speed rpm : 300

Rack travel in mm : 6.60...5.30

CONSTANT REGULATION

rpm : 300...510 Speed

TORQUE CONTROL.

Dimension a mm

Torque control curve - 1st version

rpm : 1150 1st speed

Rack travel in m: 9.80...9.90

2nd speed rpm : 650

Rack travel in m: 9.80...10.00

START CUT-OUT

1/min: 220 (240) Speed

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.80

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed : 100 **m**

Del.quantity cm3/: 140.0...160.0

1000 s: (136.0...164.0)

Remarks:

Test sheet : KHD

Edition : 31.08.92

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 764AG

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQV300...1150PA820-1

: 0 421 813 727 Governer no.

Customer-spec. information

Customer : KHD

Engine : BF12L513

1st version kW : 250.0

Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9- 8- 5- 2Phasing

: 0-15-60-75-120-135-180-195-240-255-300-

315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 9.40...9.50

Del.quantity cm3/: 9.4...9.6

100 s: (9.1...9.8)

Spread cm3 : 0.4

100 s: (0.7)

2rid speed rpm : 300.0

Rack travel in mm : 6.6...6.8

Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.2)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.40

2nd speed rpm : 450

: 2.80...3.20

travel mm 3rd speed rpm : 750

travel mm : 4.90...5.30

4th speed rpm : 1200

travel mm : 8.40...8.60

5th speed rpm : 1300

travel mm : 9.40...9.80

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1190 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 94.0...96.0

1000 : (91.5...98.5)

cm3 : 4.00 Spread 1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 119...127

Testing:

1st rack travel in: 8.40

Speed rpm : 1190...1200 2nd rack travel in: 5.50

rpm : 1240...1270 Speed

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 85...93

Testing:

Speed rpm : 100 Minimum rack trave: 8.20 rpm : 300

Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

rpm : 300...510 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

rpm : 1150 1st speed

Rack travel in m: 9.40...9.50

rpm : 650 2nd speed

Rack travel in m: 9.40...9.60

START CUT-OUT

1/min: 220 (240) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.40

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...160.0

1000 s: (136.0...164.0)

Remarks:

On activation of the starting solenoid, the start position must be reached.

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BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet

: KHD : 31.08.92 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 764AH

Injection pump

Pump designation : PE12P110A920LS3173

: 0 411 810 708 EP type number

Governor

Governor design. : RQV300...1150PA820-1

: 0 421 813 727 Governer no.

Customer-spec. information : KHD Customer

Engine : @F12L513

1st version kW : 307.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-4-9-8-5-2-

11- 10- 3- 6- 7- 12

Phasina : 0-15-60-75-120-135-

180-195-240-255-300-

315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.60...10.70

Del.quantity cm3/: 11.9...12.1

100 s: (11.6...12.3)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.6...6.8

Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.2)

cm3 : 0.4Spread

100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.40

rpm : 450 2nd speed

: 2.80...3.20 travel mm rpm : 750 3rd speed

travel mm : 4.90...5.30

4th speed rpm : 1200

travel mm : 8.40...8.60

5th speed rpm : 1300

travel mm : 9.40...9.80

GUIDE SLEEVE POSITION

Control-Lever position

Degree: -1 rpm : 1190 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 119.0...121.0

1000 : (116.5...123.5)

Spread

cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control Lever

position degrees: 119...127

Testing:

1st rack travel in: 9.60

Speed rpm : 1190...1200

2nd rack travel in: 5.50

rpm : 1155...1185 Speed

4th rack travel in: 1400

Speed nom : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 85...93

Testina:

Speed rpm : 100

Minimum rack trave: 8.20 Speed : 300 Din

Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

Speed rpm : 300...510

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 10.60...10.70

2nd speed rpm : 650 Rack travel in m: 10.60...10.80

START CUT-OUT

Speed 1/min: 220 (240)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.60

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

Test sheet : KHD

Edition : 21,09,92

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 765AA

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQV300...1000PA907

Governer no. : 0 421 813 729

Customer-spec. information

Customer : KHD

Engine : BF12L513C

1st version kW : 333.0

: 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9- 8- 5- 2Phasing

: 0-15-60-75-120-135-

180-195-240-255-300-

315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1000

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 13.3...13.5

100 s: (13.0...13.7)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.0 2nd speed

Rack travel in mm: 6.6...6.8

Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.60...1.90 travel mm

2nd speed rpm : 450

: 3.00...3.40 travel mm

3rd speed : 750 rpm

travel mm : 5.20...5.60

: 1050 4th speed rpm

: 7.90...8.10 travel mm

: 1120 5th speed mari

: 9.50...9.90 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1000

Del.quantity : 133.0...135.0

1000 : (130.5...137.5)

Spread

cm3 : 4.00 10000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 10.40

Speed rpm : 1040...1050

2nd rack travel in: 5.50

Speed rpm : 1095...1125 4th rack travel in: 1250

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 85...93

Testina:

Speed rpm : 100 Minimum rack trave: 8.20

: 300 Speed L Du

Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

Speed rom : 315...550

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 11.40...11.50

2nd speed rpm : 700

Rack travel in m: 11.70...11.80

3rd speed rpm : 900

Rack travel in m: 11.40...11.60

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 700 Speed

Del.quantity cm3/: 139.0...145.0 1000 s: (136.0...148.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.40

rpm : 1040...1050 Speed

CO2

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...165.0

1000 s: (131.0...169.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

Test sheet : KHD

Edition : 21.09.92

RepLaces

: ISO-4113 Test oil

Combination no. : 0 401 840 765AB

Injection pump

Pump designation : FE12P110A920LS3173

: 0 411 810 708 EP type number

Governor

Governor design. : RQV300...1000PA907

: 0 421 813 729 Governer no.

Customer-spec. information

Customer : KHD

Engine : BF12L513

1st version kW : 298.0

Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9- 8- 5- 2-

CO3

Phasing : 0-15-60-75-120-135-

180-195-240-255-300-

315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 10.80...10.90

Del.quentity cm3/: 11.8...12.0

100 s: (11.5...12.2)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.0 2nd speed Rack travel in mm: 6.6...6.8

Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2) cm3 : 0.4

Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.60...1.90

2nd speed rpm : 450

travel mm : 3.00...3.40

3rd speed rpm : 750

: 5.20...5.60 travel mm

4th speed rpm : 1050

: 7.90...8.10 travel mm

5th speed rpm : 1120

: 9.50...9.90 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 Speed rpm : 1040

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 118.0...120.0 Del.quantity

1000 : (115.5...122.5)

cm3 Spread

: 4.00 1000 : (7.50)

RATED SPEED

1st version Control Lever

position degrees: 117...125

Testing:

1st rack travel in: 9.80

rpm : 1040...1050 Speed

2nd rack travel in: 5.50

rpm : 1090...1120 Speed

4th rack travel in: 1250

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 85...93

Testina:

Speed ווסיי : 100

Mirrimum rack trave: 8.20

: 300 Speed man

Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

rom : 315...550 Speed

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 10.80...10.90

2nd speed rpm : 700

Rack travel in m: 11.00...11.20

3rd speed rpm : 900

Rack travel in m: 10.80...11.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700 Del.quantity_cm3/ : 123.0...129.0

1000 s: (120.0...132.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80

rpm : 1040...1050 Speed

CO4

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...165.0

1000 s: (131.0...169.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD

Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 765AC

Injection pump

Pump designation : PE12P110A920LS3173

: 21.09.92

EP type number : 0 411 810 708

Governor

Governor design. : RQV300...1000PA907

: 0 421 813 729 Governer no.

Customer-spec. information Customer : KHD

Engine : BF12L513

1st version kW : 284.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2,90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9- 8- 5- 211- 10- 3- 6- 7- 12

Phasing : 0-15-60-75-120-135-

180-195-240-255-300-

315

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 10.30...10.40

Del.quantity cm3/: 11.1...11.3

100 s: (10.8...11.5)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.02nd speed

Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2)

cm3 : 0.4Spread

100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.60...1.90 travel mm

2nd speed rpm : 450

: 3.00...3.40 rpm : 750 travel mm 3rd speed

travel mm

: 5.20...5.60 rpm : 1050 4th speed

travel mm

: 7.90...8.10

5th speed rpm : 1120

: 9.50...9.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1040 Speed

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity

: 111.0...113.0 1000 : (108.5...115.5)

: 4.00 Spread cm31000 : (7.50)

RATED SPEED

1st version Control Lever

position degrees: 117...125

Testing:

1st rack travel in: 9.30

rpm : 1040...1050 Speed

2nd rack travel in: 5.50

rpm : 1080...1110 Speed

4th rack travel in: 1250

rom : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 85...93

Testing:

Sceed rom : 100 Minimum rack trave: 8.20 rpm : 300

Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

Speed rpm : 315...550

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 10.30...10.40

2nd speed rpm : 700

Rack travel in m: 10.50...10.70

3rd speed rpm : 900

Rack travel in m: 10.30...10.50

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700

Del.quantity cm3/: 114.0...120.0 1000 s: (111.0...123.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30

rpm : 1040...1050 Speed

006

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity_cm3/ : 135.0...165.0

1000 s: (131.0...169.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

Test sheet : KHD

Edition : 21.09.92

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 765AD

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQV300...1000PA907

: 0 421 813 729 Governer no.

Customer spec, information Customer : KHD

Engine : BF12L513

1st version kW : 270.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1- 4- 9- 8- 5- 2-Firing order

Phasina : 0-15-60-75-120-135-180-195-240-255-300-

315

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.00...10.10

Del.quantity cm3/: 10.6...10.8

100 s: (10.3...11.0)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.0 2nd speed

Rack travel in mm : 6.6...6.8 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2)

cm3 : 0.4Spread

100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.60...1.90

2nd speed ripm : 450

travel mm : 3.00...3.40

3rd speed rpm : 750

travel mm : 5.20...5.60

: 1050 4th speed rom

: 7.90...8.10 travel mm

: 1120 5th speed rpm

: 9.50...9.90 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1040 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

: 1000 Speed rpm

Del.quantity : 106.0...108.0

1000 : (103.5...110.5)

cm3 : 4.00 Spread 1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 9.00

rpm : 1040...1050 Speed

2nd rack travel in: 5.50

rpm : 1080...1110 Speed

4th rack travel in: 1250

Speed rom : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 85...93

Testing:

Speed rpm : 100 Minimum rack trave: 8.20 rpm : 300

Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

rpm : 315...550 Speed

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

rpm : 1000 1st speed

Rack travel in m: 10.00...10.10

rpm : 700 2nd speed

Rack travel in m: 10.20...10.40

3rd speed rpm : 900

Rack travel in m: 10.00...10.20

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 700 rpm

Del.quantity cm3/: 108.0...114.0 1000 s: (105.0...117.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.00

rpm : 1040...1050 Speed

CO8

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...165.0

1000 s: (131.0...169.0)

Remarks:

Check electrically unlatched starting fual dalivery (EES) with 24 volt.

: 0-15-60-75-120-135-

180-195-240-255-300-

Note remarks

Test sheet : KHD

Edition : 21.09.92

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 765AF

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQV300...1000PA907

Governer no. : 0 421 813 729

Customer-spec. information

Customer : KHD

: BF12L513 Engine

1st version kW : 313.0

Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump secting values Insp. values in parentheses

Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9- 8- 5- 2Tolerance + - *

Phasing

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 12.6...12.8

100 s: (12.3...13.0)

315

: 0.50 (0.75)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.0 2nd speed

Rack travel in mm: 6.6...6.8

Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.2)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.60...1.90 travel mm

2nd speed : 450 rpm

travel mm 3.00...3.40

: 750 3rd speed rpm

travel mm 5.20...5.60 1050 4th speed rpm

7.90...8.10 travel mm

: 1120

5th speed rpin

: 9.50...9.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Dagree: -1

rpm : 1040 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 126.0...128.0

1000 : (123.5...130.5) Spread

cm3 : 4.30

1000 : (7.50)

RATED SPEED

1st version

Control Lever

position degrees: 117...125

Testing:

1st rack travel in: 10.20

ripri : 1040...1050 Speed

2nd rack travel in: 5.50

rpm : 1090...1120 Speed

4th rack travel in: 1250

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 85...93

Testing:

Speed : 100 rpm

Minimum rack trave: 8.20

rpm : 300 Speed

Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

Speed rpm : 315...550

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 11.20...11.30 and speed rpm : 700

2nd speed

Rack travel in m: 11.40...11.60

3rd speed rpm : 900

Rack travel in m: 11.20...11.40

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 700 Speed

Del.quantity cm3/: 130.0...136.0 1000 s: (127.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20

rpm : 1040...1050 Speed

C10

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...165.0 1000 s: (131.0...169.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

BOSCH INJ. FUMP TEST SPECIFICATIONS

11- 10- 3- 6- 7- 12

Note remarks

Test sheet

: KHD

Edition

: 21.09.92

Replaces

Test oil

: ISO-4113

Combination no.

: 0 401 840 766AA

Injection pump

Pump designation

: PE12P110A920LS3173

EP type number

: 0 411 810 708

Governor

Governor design. : RQV475...1075PA907-1

Governer no.

: 0 421 813 739

Customer

Customer-spec. information : KHD

Engine

: BF12L513

1st version kW

: 300:0

Rated speed

: 2150

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Opening

pressure, bar

: 172...175

Test Lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm

: 2.80...2.90

Rack travel in mm : 9.00...12.00

: (2.75...2.95)

Firing order

: 1- 4- 9- 8- 5- 2-

C11

Phasing

: 0-15-60-75-120-135-180-195-240-255-300-

315

Tolerance + - *

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rom: 1075

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 11.8...12.0

100 s: (11.5...12.2)

Spread

cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 475.0

Rack travel in mm: 6.4...6.6

Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.5)

cm3 : 0.4Spread

100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 475

: 1.10...1.50 travel mm

2nd speed rom : 650

: 3.40...4.00 travel mm

3rd speed

rpm : 950 travel mm : 5.60...6.20

4th speed rpm :

1100 : 7.70...7.90

travel mm 5th speed

: 1150 rpm : 8.80...9.20 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1120 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed Del.quantity

rpm : 1075

: 118.0...120.0

1000 : (115.5...122.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 115...123

Testing:

1st rack travel in: 9.50

rpm : 1095...1105 Speed

2nd rack travel in: 6.00

Speed rpm : 1110...1140

4th rack travel in: 1250

nom : 0.00...1.00Speed

LOW IDLE 1

Control lever position degrees: 85...93

Testing:

: 100 Speed rpm Minimum rack trave: 8.00

rpm : 475

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed nom : 475...640

TORQUE CONTROL

Dimension a mm : 0.30

Torque control curve - 1st version

1st speed rpm : 1075

Rack travel in m: 10.50...10.60

2nd speed rpm : 800

Rack travel in m: 10.80...11.00

START CUT-OUT

1/min: 395 (415) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800 Del.quantity cm3/: 125.0...131.0

1000 s: (122.0...134.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.50

rpm : 1095...1105 Speed

C12

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...165.0 1000 s: (131.0...169.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

: 0-15-60-75-120-135-

180-195-240-255-300-

Note remarks

Test sheet

: KHD

Edition : 21.09.92

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 767AA

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQ300/1150PA894-1

Governer no. : 0 421 801 485

Customer-spec. information

Customer : KHD

Engine : BF12L513 C

1st version kW : 367.0

: 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9- 8- 5- 2-

1st speed

Phasing

Tolerance + - *

BASIC SETTING

Time to cyl. no. : 1

rpm: 1150

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 14.7...14.9

100 s: (14.4...15.1)

315

: 0.50 (0.75)

Spread cra3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm: 6.6...6.8

Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2) cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

Aneroid pressure h: 800

: 147.0...149.0 Del.quentity

1000 : (144.5...151.5)

cm3 : 4.00 1000 : (7.50) Spread

RATED SPEED

1st version

Setting point:

Speed rpm

Rack travel in mm: 20.0

Testing:

1st rack travel in: 11.00

rpm : 1195...1210 Speed

2nd rack travel in: 5.50

rom : 1240...1270 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 6.7

Testing:

Speed : 100 rpin

Minimum rack trave: 8.20

rpm : 300 Speed

Rack travel in mm : 6.60...6.80 Rack travel in mm : 2.00

.mm : 390...430 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 12.00...12.10

2nd speed rpm : 750

Rack travel in m: 12.00...12.20

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 500 TO:TO

Pressure hPa : 870

Rack travel mm : 12.00...12.10

Measurement

1/min : 500Speed

1st pressure hPa : -

Rack travel in m: 10.60...10.80

2nd pressure hPa : 370

Rack travel in m: 11.70...11.80

3rd pressure hPa : 260

Rack travel in m: 11.00...11.20

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 450

Del.quantity cm3/: 108.0...112.0

1000 s: (105.5...114.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

rpm : 1195...1210

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...165.0 1000 s: (131.0...169.0)

Remarks:

sheck electrically unlatched starting fuel delivery (EES) with 24 volt.

Test sheet : KHD

Edition : 21.09.92

Replaces

Test oil

Combination no. : 0 401 840 767AB

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQ300/1150PA894-1

: 0 421 801 485 Governer no.

Customer-spec. information

Customer : KHD

Engline : BF12L513 C

1st version kW : 351.0

Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Prestroke mm

: 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1- 4- 9- 8- 5- 2-Firing order

: 1SO-4113

Phasing : 0-15-60-75-120-135-180-195-240-255-300-

315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 13.7...13.9

100 s: (13.4...14.1)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.0 2nd speed

Rack travel in mm : 6.6...6.8 Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.2)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 Speed

rpm : 600 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 800

: 137.0...139.0 Del.quaritity

1000 : (134.5...141.5)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version

Setting point:

rpm Rack travel in mm: 20.0

Testing:

1st rack travel in: 10.60

rom : 1195...1210 Speed

2nd rack travel in: 5.50

rpm : 1235...1265 Speed

4th rack travel in: 1350

Speed rom : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

rom : 300 Speed Rack travel in mm: 6.7

Testing:

Speed rpm : 100 Minimum rack trave: 8.20 rpm : 300

Rack travel in mm : 6.60...6.80

Rack travel in mm : 2.00

rpm : 390...430 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 11.60...11.70

2nd speed rpm : 750

Rack travel in m: 11.60...11.80

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed roin hPa : 800 Pressure

Rack travel mm : 11.60...11.70

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.60...10.80

2nd pressure hPa : 300

Rack travel in m: 11.30...11.40
3rd pressure hPa : 230
Rack travel in m: 10.80...11.00

START CUT-OUT

1/min: 220 (240) **Dead**2

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed rpm : 450

Del.quantity cm3/: 108.0...112.0 1000 s: (105.5...114.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60

Speed rpm : 1195...1210

STARTING FUEL DELIVERY

Speed rom : 100

Del.quantity cm3/: 135.0...165.0 1000 s: (131.0...169.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : STE 9,7 f 1 Phasing : 0-60-120-180-240-300 Edition : 05.10.92 Replaces : 02.89 Tolerance + - * : 0.50 (0.75) Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 401 846 554 BASIC SETTING Injection pump Pump designation : PE6P110A720RS516 1st speed rom: 1100 EP type number : D 411 816 176 Governor Rack travel in mm : 14.40...14.50 Governor design. : RQ300/1100PA412-2 Governer no. : 0 421 801 435 Del.quantity cm3/: 14.2...14.4 Customer-spec, information 100 s: (13.9...14.7) Customer : HAEP Spread cm3 : 0.4Engine : WD615.64 100 s: (0.7) 1st version kW : 175.0 rpm : 300.0 Rated speed : 2200 2nd speed Rack travel in mm: 6.4...6.6 TEST BENCH REQUIREMENTS Del.quartity cm3/: 1.9...2.4 100 s: (1.6...2.6) Test oil Spread cm3 : 0.4inlet temp. °C : 38...42 100 s: (0.7) Overflow valve GUIDE SLEEVE POSITION : 1 417 413 025 Control-lever position Degree: -1 Inlet press., bar: 1.50 rpm : 600 Rack travel in mm: 19.20...20.80 Test nozzle holder assembly : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP Opening 1st version pressure, bar : 172...175 rpm : 1100 Speed Aneroid pressure h: 900 Del.quantity : 142.0...144.0 Test lines : 1 680 750 089 1000 : (139.0...147.0) : 4.00 Spread cm3 Outside diameter 1000 : (7.50) x Wall thickness x Length mm : 8.00x2.50x600 RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Set equal delivery quant. Setting point: per values Speed rpm : 600 Rack travel in mm : 20.0 BEGINNING OF DELIVERY Test pressure, bar: 25...27 Testing: 1st rack travel in: 13.40 Prestroke mm : 2.80...2.90 Speed rpm : 1145...1160 : (2.75...2.95) 2nd rack travel in: 4.00

Speed

rpm : 1230...1260

Rack travel in mm : 9.00...12.00

4th rack travel in: 1300 Speed rpm : 0.00...1.00 LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.5 Testing: rpm : 100 Speed Minimum rack trave: 8.00 rpm : 300 Speed Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 rpm : 400...440 TORQUE CONTROL Dimension a mm : 0.55 Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 14.40...14.50 2nd speed rpm : 700 Rack travel in m: 15.60...15.80 3rd speed rpm : 1000 Rack travel in m: 14.70...14.90 4th speed rpm : 860 Rack travel in m: 15.40...15.60 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 900 Pressure Rack travel mm : 15.60...15.30 Measurement Speed $1/\min : 500$ 1st pressure hPa : -Rack travel in m: 13.10...13.30 2nd pressure hPa : 490 Rack travel in m: 15.00...15.10 3rd pressure hPa : 300 Rack travel in m: 13.60...13.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 rpm : 700 Del.quantity cm3/: 160.0...164.0 1000 s: (157.0...167.0)

> cm3 : 6.00 1000 s: (9.)

> > : 500

Del.quantity cm3/: 116.0...118.0 1000 s: (113.0...121.0) cm3 : 4.00Spread 1000 s: (7.50) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.40 rpm : 1145...1160 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 175.0...195.0 1000 s: (171.0...199.0) Remarks: . Delivery-valve spring pre-tension = 2.40...2.60 mm. Permissible alteration from 2.20...2.90

Spread

Speed

Aneroid pressure h: -

rom

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : STE 10,0 g : 05.10.92 Edition Replaces : 10.89 Test oil : ISO-4113 Combination no. : 0 401 846 912 Injection pump Pump designation : PE6P11DA72DRS3243 EP type number : 0 411 816 770 Governor Governor design. : R0300/1100PA412-4 Governer no. : 0 421 801 496 Customer-spec, information Customer : HAEP : WD615.68 Engine 1st version kW : 228.0 : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00X1.50X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ___

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 **C19**

: 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Tolerance $+ + ^{\circ} : 0.50 (0.75)$ Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1100 Rack travel in mm : 13.70...13.80 Del.quantity cm3/: 18.3...18.5 100 s: (18.0...18.8) Spread cm3 : 0.4100 s: (0.7) rpm : 300.02nd speed Rack travel in mm: 3.9...4.1 Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.4) cm3 : 0.4Spread 100 s: (0.7) GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 600 Speed Rack travel in mm : 15.40...16.60 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1100 Aneroid pressure h: 1200 Del.quantity : 183.0...185.0 1000 : (180.0...188.0) : 4.00 Spread cm3 1000 : (7.50) RATED SPEED 1st version Setting point: : 600 Speed rpm Rack travel in mm : 16.0 Testing: 1st rack travel in: 12.70

rpm : 1145...1160

rpm : 1240...1270

Speed

Speed

2nd rack travel in: 4.00

4th rack travel in: 1350

Speed rom : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Speed Rack travel in mm: 4.0

Testing:

Speed rpm : 100 Minimum rack trave: 5.50 Speed : 300 rpm

Rack travel in mm : 3.90...4.10 Rack travel in mm : 2.00

: 350...390 Speed וחכרו

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 hPa : 1200 Pressure

Rack travel mm : 13.70...13.80

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 9.80...10.00

2nd pressure hPa : 630

Rack travel in m: 12.90...13.00 3rd pressure hPa : 375 Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 700 Del.quantity cm3/ : 193.0...197.0

1000 s: (190.0...200.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 119.0...121.0

1000 s: (116.0...124.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 225.0...265.0 1000 s: (221.0...269.0)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Note remarks

Test sheet : STE 10,0 h Edition : 05.10.92 Replaces : 10.89

Test oil : ISO-4113

Combination no. : 0 401 846 913

Injection pump

Pump designation : PE6P110A720RS3243 EP type number : 0 411 816 770

Governor

Governor design. : RQV250...1100PA413-5

: 0 421 813 811 Governer no.

Customer-spec, information Customer : HAEP

: WD615.68 Engine

1st version kW : 228.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length am

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2,90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 18.3...18.5

100 s: (18.0...18.8)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm: 3.9...4.1

Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.4)

Spread cm3 : 0.4100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250 : 0.90...1.30 travel mm

rpm : 350 2nd speed

travel mm : 1.70...2.30

: 700 3rd speed rpm

: 4.40...5.00 travel mm

4th speed rpm : 1145

: 8.30...8.50 travel mm

5th speed rpm : 1250

: 9.50...9.90 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1200 Speed

Rack travel in mm : 11.40...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Aneroid pressure h: 1200

Del.quantity : 103.0...188.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 102...110

Testina:

1st rack travel in: 12.70

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1240...1270 Speed

4th rack travel in: 1350

Speed rom : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 68...76

Testing:

Speed : 100 rom Minimum rack trave: 5.50 rpm : 250 Speed

Rack travel in man : 3.90. . . 4.10

CONSTANT REGULATION

Speed rpm : 250...350

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rom. Pressure hPa : 1200

Rack travel mm : 13.70...13.80

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.80...10.00

2nd pressure hPa : 630

Rack travel in m: 12.90...13.00

3rd pressure hPa : 375

Rack travel in m: 10.70...10.90

START CUT-OUT

1/min: 170 (190) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Ameroid pressure h: 1200 Speed rom : 700

C22

Del.quantity cm3/: 193.0...197.0

1000 s: (190.0...200.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 119.0...121.0 1000 s: (116.0...124.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 225.0...265.0

1000 s: (221.0...269.0)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : SCA Phasina : 0-60-120-180-240-300 Edition : 21.09.92 Replaces Tolerance + - * : 0.50 (0.75) Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 401 846 926AA BASIC SETTING Injection pump Pump designation : PE6P110A720RS3040-2 1st speed rpm: 700 : D 411 816 774 EP type number Governor Rack travel in mm : 12.30...12.40 Governor design. : RQV200...1000PA555-4 : 0 421 813 878 Governer no. Del.quantity cm3/: 17.1...17.3 Customer-spec. information 100 s: (16.9...17.5) Customer : SCANIA Spread cm3 : 0.6 Engine : DS11 100 s: (0.9) TEST BENCH REQUIREMENTS rom : 325.02nd speed Test oil Rack travel in mm: 6.5...6.9 inlet temp. °C : 38...42 Det.quantity cm3/: 2.0...2.4 cm3 : 0.3Spread Overflow valve 100 s: (0.6) : 1 417 413 025 (B) Setting of injection pump Inlet press., bar: 1.50 with governor Test nozzle holder GUIDE SLEEVE TRAVEL : 1 688 901 104 assembly 1st speed rpm : 225 travel mm : 1.10...1.50 Opening rpm : 350 2nd speed : 2.30...2.90 pressure, bar : 250...253 travel mm 3rd speed rpm : 700 Orifice plate : 4.70...5.30 travel mm diameter mm : 0,7 4th speed rpm : 1050 travel mm : 8.40...8.60 : 1165 5th speed rpm : 1 680 750 008 Test lines : 9.90...10.30 travel mm Outside diameter GUIDE SLEEVE POSITION x Wall thickness Control-Lever position x Length mm : 6.00x2.00x600 Degree: -1 rpm : 1070 Speed (A) Injection pump setting values Rack travel in mm : 15.20...17.80 Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values 1st version BEGINNING OF DELIVERY Speed rpm : 700 Test pressure, bar: 25...27 Aneroid pressure h: 900

Del.quantity

Spread

: 171.0...173.0

1000 : (169.0...175.0)

: 6.00

1000 : (9.00)

cm3

Prestroke mm

: 3.30...3.40

Rack travel in mm : 9.00...12.00

: (3.25...3.45)

RATED SPEED

1st version

Control lever

position degrees: 112...120

Testing:

1st rack travel in: 11.30

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1140...1170

4th rack travel in: 1250

Speed rpm : 0.00,..1.00

LOW IDLE 1

Control Lever

position degrees: 65...73

Testing:

Speed rpm : 100

Minimum rack trave: 8.20

Speed rpm: 325

Rack travel in mm : 6.50...6.70

Rack travel in mm : 2.00

Speed rpm : 400...460

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500 Pressure hPa : 900

Rack travel mm : 12.30...12.40

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 9.80...10.20

2nd pressure hPa : 200

Rack travel in m: 11.70...11.80

3rd pressure hPa : 140

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/: 112.0...116.0

1000 s: (110.0...118.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 240.0...290.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 325

Rack travel in mm : 6.50...6.70

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

:

Start-of-delivery setting with ROBO

diaphragm.

Note remarks

Test sheet : HAE 12,0 a Edition : 05.10.92 Replaces : 03.92 Test oil : ISO-4113

Combination no. : 0 401 846 933

Injection pump

Pump designation : PE6P110A320RS3260 EP type number : 0 411 816 775

Governor

Governor design. : RQ250/1050PA969 Governer no. : 0 421 801 538

Customer-spec, information Customer : HAFP

: X6130 NA Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

ist speed rpm: 600

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 13.0...13.2

100 s: (12.7...13.4)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed npm : 250.0Rack travel in mm: 7.6...8.0 Del.quantity cm3/: 1.5...2.0

100 s: (1.2...2.2)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

> Degree: -1 rpm : 500

Rack travel in mm : 12.60...14.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 600 Speed

Del.quantity : 130.0...132.0 1000

: (127.5...134.5) : 4.00 cm3

Spread

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm

Rack travel in mm: 13.4

Testing:

1st rack travel in: 10.40

: 1085...1100 Speed rpm 2nd rack travel in: 4.00

Speed rpm : 1110...1140

4th rack travel in: 1250

Speed : 0.00...1.80 חמיו

LOW IDLE 1

Control lever position degrees: 73...81 Testing: Speed man : 100 Minimum rack trave: 9.30 Speed rpm : 250 Rack travel in mm : 7.70...7.90 Rack travel in mm: 2.00 rom : 295...335 Sceed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1035 Rack travel in m: 11.30...11.50 2nd speed rpm : 600 Rack travel in m: 12.10...12.20 FUEL DELIVERY CHARACTERISTICS 1st version

Speed rpm : 1035 Del.quantity cm3/: 129.5...133.5 1000 s: (127.0...136.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.40 Speed rpm : 1085...1100

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 180.0...200.0 1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 250 Rack travel in mm : 7.60...8.00 Del.quantity cm3/: 15.0...20.0 1000 s: (12.5...22.5) Spread cm3 : 4.50

Spread cm3 : 4.50 1000 s: (7.50)

Remarks:

CS9

Note remarks

Test sheet

: SCA Edition : 21.09.92

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 950

Injection pump

Pump designation : PE6P110A720RS3289

EP type number : 0 411 816 781

Governor

Governor design. : RQV200...1100PA555-5

: 0 421 813 943 Governer no.

Customer-spec, information Customer : SCANIA

Engine : DS11 63A

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 104 assembly

Opening

: 250...253 pressure, bar

Orifice plate

diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.30...3.40 Prestroke mm

: (3.25...3.45)

Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 17.1...17.3

100 s: (16.9...17.5)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 325.02nd speed

Rack travel in mm: 6.5...6.9 Del.quantity cm3/: 2.0...2.4

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.70...1.10

2nd speed rpm : 350

: 2.00...2.60 travel mm

3rd speed rpm : 650

: 4.90...5.50 travel mm

rpm : 1145 4th speed

travel mm : 8.30...8.50

5th speed rpm : 1300

travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1130 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

: 171.0...173.0 Del.quantity 1000

: (169.0...175.0)

Spread cm3 : 6.00 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 112...120

Testina:

1st rack travel in: 11.30

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1280...1310

4th rack travel in: 1420

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 65...73

Testing:

Speed : 100 COM Minimum rack trave: 8.20 Speed CDm : 325

Rack travel in mm : 6.50...6.70

Rack travel in mm : 2.00 : 400...450 Speed

CISM

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 CDm hPa : 900 Pressure

Rack travel mm : 12.30...12.40

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.20

2nd pressure hPa : 200

Rack travel in m: 11.70...11.80

3rd pressure hPa : 140

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 Speed rpm : 1100

Del.quantity cm3/: 160.0...168.0

1000 s: (158.0...170.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 112.0...116.0 1000 s: (110.0...118.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.30

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 240.0...290.0 Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 325

Rack travel in mm : 6.50...6.70

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with ROBO diaphragm.

Note remarks

Test sheet

: DAF

Edition

: 05.10.92

Replaces

: 04.92

Test oil

: ISO-4113

Combination no. : 0 401 846 964

Injection pump

Pump designation : PE6P110A320RS3302

EP type number

: 0 411 816 787

Governor

Governor design. : RQ300/1000PA1012-1

Governer no.

: 0 421 801 648

Customer-spec. information Customer

: DAF

Engine

: LT 195 L

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 101

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test lines

: 1 680 750 089

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 14.00...15.00

D01

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack tray, m: 3.90...4.10

& maximum rack tra: 13.9...14.9 Difference ° CS : 3.00...5.00

BASIC SETTING

1st speed

rpm: 850

Rack travel in mm : 14.40...14.50

Del.quantity cm3/: 17.3...17.5

100 s: (17.0...17.7)

Spread

cm3 : 0.4

100 s: (0.7)

2nd speed

rpm : 300.0

Rack travel in mm: 5.5...5.7 Del.quantity cm3/: 1.6...2.1

100 s: (1.4...2.4)

Spread

cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION Control-Lever position

Degres: -1

rpm : 600

Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed

rpm : 850

Aneroid pressure h: 1000

Del.quantity

: 173.0...175.0 1000 : (170.5...177.5)

Spread

: 4.00

cm3

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 20.0

: 600

Testing:

1st rack travel in: 13.40

rpm : 1025...1040 Speed

2nd rack travel in: 4.00

rpm : 1105...1135 Speed

4th rack travel in: 1300

rpm : 0.00...1.50 Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Rack travel in mm : 5.6

Testina:

Speed rpm : 100 Minimum rack trave: 10.00 Speed rpm : 300

Rack travel in mm: 5.50...5.70 Rack travel in mm: 2.00

rpm : 330...370 Speed

TORQUE CONTROL

Dimension a mm : --

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 15.10...15.20

2nd speed rpm : 1000

Rack travel in m: 15.00...15.20

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 600 rom Pressure hPa : 1000

Rack travel mm : 14.40...14.50

Measurement

 $1/\min : 600$ Speed

1st pressure hPa : -

Rack travel in m: 12.30...12.50

2nd pressure hPa : 530

Rack travel in m: 13.90...14.00

3rd pressure hPa : 380

Rack travel in m: 12.90...13.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 600

Del.quantity cm3/: 131.0...133.0 1000 s: (128.5...135.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.40

Speed rpm : 1025...1040

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 330.0...370.0 1000 s: (327.0...373.0)

Rack travel in mm : 19.50....1.00

LOW IDLE

Speed rpm : 300 Rack travel in mm : 5.50...5.70 Del.quantity cm3/: 16.5...21.5

1000 s: (14.0...24.0)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet

: MB

Edition : 21.09.92

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 967

Injection pump

Pump designation : PE6P110A320LS3851-2

EP type number : 0 411 816 785

Governor

Governor design. : RQV350...1050PA378

-12

: 0 421 814 016 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM441

1st version kW : 151.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 11.8...12.0

100 s: (11.5...12.2)

cm3 : 0.8Spread

100 s: (1.3)

2nd speed mem : 350.0

Rack travel in mm: 7.1...7.7

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.4)

cm3 : 0.6

100 s: (1.1)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

Spread

1st speed rpm : 350

: 1.80...2.30 travel mm

2nd speed rpm : 455

travel mm : 3.40...3.90

rpm : 880 3rd speed

travel mm : 5.60...6.10

rpm : 1107 4th speed

travel mm : 8.00...8.50

rpm : 1209 5th speed

: 9.80...10.20 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 9.90...12.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1050 Speed Del.quantity : 118.0...120.0 1000 : (115.5...122.5) cm3 : 8.50 1000 : (13.00) Spread RATED SPEED 1st version Control Lever position degrees: 116...124 Testina: 1st rack travel in: 11.20 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Speed rom : 1160...1190 4th rack travel in: 1300 Speed rpm : 0.00...1.40 LOW IDLE 1 Control Lever position degrees: 67...75 Testina: Speed : 250 rpm Minimum rack trave: 10.00 CONSTANT REGULATION Speed rpm : 350...450 START CUT-OUT Speed 1/min : 270 (290) FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 119.0...125.0 1000 s: (116.5...127.5) cm3 : 11.00 Spread 1000 s: (14.) 1000 s: (85.5...92.5) cm3 : 11.00 Spread 1000 s: (14.0)

BREAKAWAY

1st version 1mm rack travel less than full load rack tr: 11.20

rpm : 1090...1100 Speed

004

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

* = Set at reduced-delivery stop.

: 3.70...3.80 : (3.65...3.85) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Note remarks Rack travel in mm : 13.00...14.00 Firing order : 1-8-7-2-6-5-: KHD 12,8 c1 Test sheet 4-3 Edition : 25.09.92 Replaces : 01.92 Test oil : ISO-4113 Phasing : 0-45-90-135-180-225-Combination no. : 0 401 848 820 270-315 Tolerance + - ° : 0.50 (0.75)Injection pump Pump designation : PE8P12OA720LS3281-1 Time to cyl. no. : 1 EP type number : 0 411 828 727 Governor BASIC SETTING Governor design. : RQV300...1050PA1009 Governer no. : 0 421 813 938 1st speed rpm: 1050 Customer-spec. information Rack travel in mm: 12.70...12.80 Customer : KHD Del.quantity cm3/: 18.6...18.8 Engine : BF8L513LC 100 s: (18.3...19.1) 1st version kW : 243.0 Rated speed : 2100 Spread cm3 : 0.5TEST BENCH REQUIREMENTS 100 s: (0.9) Test oil 2nd speed rpm : 300.0inlet temp. °C : 38...42 Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 3.0...3.6 Overflow valve 100 s: (2.7...3.9) : 1 417 413 025 Spread cm3 : 0.8100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump Test nozzle holder with governor : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL **Opening** rom : 3001st speed : 207...210 pressure, bar travel mm : 2.40...2.80 rpm : 450 2nd speed : 3.40...4.00 rpm : 725 Orifice plate travel mm diameter mm : 0,8 3rd speed : 5.30...5.90 travel mm rpm : 1100 4th speed Test Lines : 1 680 750 075 travel mm : 9.10...9.30 5th speed rpm : 1175 Outside diameter : 10.00...10.40 travel mm x Wall thickness x Lenath mm : 8.00x2.50x1000

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values

BEGINNING OF DELIVERY

Tentropy 1000

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm: 1070
Rack travel in mm: 15.20...17.80
FULL LOAD DELIV. AT FULL LOAD STOP

Test pressure, bar: 25...27 + 1st version + Speed rpm : 1050

Aneroid pressure h: 850 Del.quantity : 186.0...188.0 1000 : (183.0...191.0) : 5.00 Spread cm31000 : (9.00)RATED SPEED 1st version Control lever position degrees: 119...127 Testing: 1st rack travel in: 11.70 Speed rpm : 1090...1100 2nd rack travel in: 4.00 rpm : 1180...1210 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 86...94 Testina: Speed : 100 rom: Minimum rack trave: 7.50 rpm : 300 Rack travel in mm : 5.90...6.10 CONSTANT REGULATION rpm : 300...500 Speed TORQUE CONTROL Dimension a mm : 0.30 Torque control curve – 1st version rpm : 1050 1st speed Rack travel in m: 12.70...12.80 2nd speed rpm : 650 Rack travel in m: 12.90...13.10 3rd speed rpm : 775 Rack travel in m: 12.80...13.00 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : 850 : 12.70...12.80 Rack travel mm Measurement

 $1/\min : 500$

Rack travel in m: 11.30...11.50

Rack travel in m: 12.50...12.60

1st pressure hPa : -

2nd pressure hPa : 450

3rd pressure hPa : 310 Rack travel in m: 12.00...12.10 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 850 Speed rpm : 650 Del.quantity cm3/: 186.0...190.0 1000 s: (183.0...193.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 124.0...126.0 1000 s: (121.0...129.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.70 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed COM Del.quantity cm3/: 175.0...195.0 1000 s: (175.0...195.0) Remarks: Check electrically unlatched starting fuel delivery (EES) with 24 volt. On activation of the starting solenoid, the start position must be reached.

Speed

Note remarks

Test sheet

: HAE

Edition

: 05.10.92

Replaces

Test oil

: ISQ-4113

Combination no. : 0 401 856 159

Injection pump

Pump designation : PE6P110A721RS369

EP type number

: 0 411 816 121

Governor

Governor design. : RQ300/1300PA412-6

Governer no.

: 0 421 801 638

Customer-spec. information Customer

: HAEP

Engine

: WD615.60

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Opening

pressure, bar

: 172...175

Test lines

: 1 680 750 089

Outside diameter

x Wall thickness

x Length mm

: 8.00X2.50X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-

Phasing

: 0-60-120-180-240-300

Tolerance + - *

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1300

Rack travel in mm : 14.10...14.20

Del.quantity cm3/: 14.6...14.8

100 s: (14.3...15.0)

Spread

cm3 : 0.4

100 s: (0.7)

2nd speed

rpm : 300.0

Rack travel in mm: 8.8...9.2

Del.quantity cm3/: 1.8...2.4 100 s: (1.5...2.6)

Spread

cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.80...17.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 700 Del.quantity

: 146.0...148.0 1000 : (143.5...150.5)

Spread

: 4.00 cm3

1000 : (7.50)

RATED SPEED

1st version

Setting point: rpm

: 600

Rack travel in mm: 16.4

Testina:

1st rack travel in: 13.10

Speed rpm: 1345...1360 2nd rack travel in: 4.00

Speed rpm : 1425...1455 4th rack travel in: 1550

Speed

rpm : 0.00...1.40

LOW IDLE 1 Setting point w/out bumper spring mon : 300 Rack travel in mm: 6.0

Testing:

Speed COM : 100 Minimum rack trave: 7.40 : 300 rpm

Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed rpm : 400...440

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

rpm : 1300 1st speed

Rack travel in m: 14.10...14.20

2nd speed rom : 700

Rack travel in m: 14.60...15.00

3rd speed rpm : 900

Rack travel in m: 14.50...14.70 4th speed rpm : 1100

Rack travel in m: 14.30...14.50

Aneroid/Altitude Compensator Test

1st version Setting

rom : 700 hPa : 700 Speed man Pressure

: 14.30...14.50 Rack travel mm

Measurement

Speed 1/min: 700

1st pressure hPa : -

Rack travel in m: 12.40...12.60

2nd pressure hPa : 310
Rack travel in m: 14.10...14.20
3rd pressure hPa : 205
Rack travel in m: 12.70...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm : 700 Speed

Del.quantity cm3/: 135.0...139.0 1000 s: (132.0...142.0)

Aneroid pressure h: rpm_ : 700

Del.quantity cm3/: 101.0...103.0

1000 s: (98.5...105.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.10

rpm : 1345...1360

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 135.0...155.0 1000 s: (131.0...159.0)

Rack travel in mm : 16.50...17.50

Remarks:

80d

BOSCH INU. PUMP TEST SPECIFICATIONS Note remarks Test sheet : LIE Edition : 21.09.92 Replaces Test oil : ISO-4113 Combination no. : 0 401 876 770B Injection pump Pump designation: PE6P110A320LS3852 EP type number : 0 411 816 768 Governor Governor design. : RSV400...900P1A544 Governer no. : 0 421 833 326 Cust. part no. : 9270100 Customer-spec. information Customer : LIEBHERR Engine : D 9306 T 1st version kW : 172.0 : 1800 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 **Opening** pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1,50x600 (A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90 : (3.75...3.95) Rack travel in mm : 9.00...12.00 Firing order : 1-6-3-5-2-4 Phasing : 0-75-120-195-240-315 Tolerance + - * : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 900 Rack travel in mm : 12.50...12.60 Del.quantity cm3/: 14.8...15.0 100 s: (14.5...15.2) Spread cm3 : 0.4100 s: (0.7) 2nd speed rpm : 400.0Rack travel in mm: 5.8...6.0 Del.quantity cm3/: 1.3...1.8 100 s: (1.0...2.0) **Spread** cm3 : 0.4100 s: (0.7) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 2.50 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 900 Del.quantity : 148.0...150.0 1000 : (145.5...152.5) Spread cm3 : 4.00 1000 : (7.50) RATED SPEED 1st version Control lever position degrees: 88...96

Testing:

1st rack travel in: 11.50

rpm : 930...940 Speed 2nd rack travel in: 4.00 Speed rpm : 945...975 3rd rack travel in: 4.00 rpm : 950...980 Speed 4th rack travel in: 1120 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring Speed rpm : 400 Rack travel in mm: 5.4 Speed mon : 400 Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 rpm : 450...510 Speed TORQUE CONTROL Torque control curve - 1st version nom: 900 1st speed Rack travel in m: 12.50...12.60 2nd speed rpm : 500 Rack travel in m: 12.50...12.70 3rd speed now : 420 Rack travel in m: 13.70...14.30 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/: 144.0...148.0 1000 s: (141.0...151.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.50 Speed rpm : 930...940 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0) LOW IDLE Speed rpm : 400 Rack travel in mm : 5.80...6.00 Del.quantity cm3/ : 13.0...18.0 1000 s: (10.5...20.5) Spread cm3 : 4.501000 s: (7.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 11,0 z : 25.09.92 Edition : 06.91 Replaces Test oil : ISO-4113 Combination no. : 0 401 876 775 Injection pump Pump designation : PE6P110A320LS3835-3 EP type number : 0 411 816 773 Governor Governor design. : RSV350...1050P0A556 Governer no. : 0 421 833 388 Customer-spec. information Customer : MERCEDES-BENZ Engine : OM 441 1st version kW : 165.0 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 089 Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27 D11

: 4.00...4.10 Prestroke mm : (3.95...4.15) Rack travel in mm : 9.00...12.00 Firina order : 6-3-5-2-4-1 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 6 BASIC SETTING 1st speed rpm: 1030 Rack travel in mm : 13.50...13.60 Del.quantity cm3/: 13.6...13.8 100 s: (13.3...14.0) Spread cm3 : 0.4100 s: (0.8) 2nd speed rpm : 350.0 Rack travel in mm : 8.3...8.9 Del.quantity cm3/: 1.2...1.8 100 s: (0.9...2.0) Spread cm3 : 0.4100 s: (0.7) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : ? FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1030 Speed : 136.0...138.0 Del.quantity 1000 : (133.5...140.5) Spread cm3 : 4.00 1000 : (8.00) RATED SPEED 1st version Control lever

position degrees: 88...96

1st rack travel in: 12.50

Testing:

Observe VDT-I-420/120

```
rpm : 1070...1080
 Speed
2nd rack travel in: 4.00
 Speed
           rpm : 1130...1160
4th rack travel in: 1300
 Speed
           rpm : 0.30...1.40
```

LOW IDLE 1 Control Lever

position degrees: 64...72

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm: 8.6

Testina:

Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 350

Rack travel in mm : 8.50...8.70

Rack travel in mm: 2.00 Speed : 380...440 rom

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed rpm

Del.quantity cm3/: 124.0...128.0

1000 s: (121.0...131.9)

Spread cm3 : 6.00 1000 s: (8.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.50

Speed rpm : 1070...1086

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

Set 14.1...14.3 mm control-rod travel at lower full-load stop with $n = 1030 \, 1/min.$ Make full-load setting at upper fullload stop in accordance with test specifications.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 14,7 s 3 Edition : 21.09.92 Replaces Test oil : ISO-4113 Combination no. : 0 401 878 716 Injection pump Pump designation : PE8P110A320LS3842-1 EP type number : 0 411 818 716 Governor Governor design. : RSV675...1050POA823 : 0 421 833 365 Governer no. Customer-spec, information Customer : MERCEDES-BENZ Engine : 0M442 1st version kW : 213.0 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 33...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzie holder : 0 631 343 009 assembly Openina pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00X1.50X600 (A) Injection pump setting values Insp. values in parentheses

: 4.00...4.10 Prestroke mm : (3.95...4.15) Rack travel in mm : 9.00...12.00 : 8-7-2-6-3-5-Firing order Phasing : 0-45-90-135-180-225-Phasing : 270-315 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 8 BASIC SETTING 1st speed rpm : 1030Rack travel in mm : 13.00...13.10 Del.quantity cm3/: 14.1...14.3 100 s: (13.8...14.5) Spread cm3 : 0.4 100 s: (0.7) 2nd speed rpm : 675.0 Rack cravel in mm: 4.8...5.4 Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.3) cm3 : 0.4Spread 100 s: (0.7) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : ? FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1030 Speed : 141.0...143.0 Del.quantity 1000 : (138.5...145.5) : 4.00 Spread cm3 1000 : (7.00) RATED SPEED

1st version Control lever

position degrees: 88...96

per values ___

Set equal delivery quant.

Testing:

1st rack travel in: 12.00

Speed rpm : 1070...1080

2nd rack travel in: 4.00

Speed rpm : 1100...1118 4th rack travel in: 1350

rom : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 72...80 Setting point w/out bumper spring

Speed rpm : 675 Rack travel in mm: 5.1

Testina:

Speed : 100 rpm Minimum rack trave: 15.00 Speed : 675 MON

Rack travel in mm : 4.80...5.40

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed rpm

Speed Fpm : 750
Del.quantity cm3/: 132.0...136.0
1000 s: (129.0...139.0)
Spread cm3 : 5.00
1000 s: (8.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.00

Speed ripra : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

APPLICATION

Combine-harvester

Note remarks

Test sheet : MAN 11,9 r2 Edition : 14.10.92 Replaces : 18.02.91 Test oil : ISO-4113

Combination no. : 0 402 036 735

Injection pump

Pump designation : PES6P120A720/3LS3250

EP type number : 0 412 026 742

Governor

Governor design. : RQ300/1000PA813-13

: 0 421 801 529 Governer no.

Customer spec. information Customer : MAN

: D2866LF03/LUH01 Engine

: 273.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. "C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80

: (3.65...3.85) Rack travel in mm : 14,50...15.50

: 6-2-4-1-5-3 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10 & maximum rack tra: 14.5...15.5 Difference * CS : 2.00...4.00

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 15.00...15.10

Del.quantity cm3/: 24.2...24.4

100 s: (23.9...24.7)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm : 4.8...5.2 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1200

Del.quantity : 242.0...244.0 1000 : (239.0...247.0)

Spread : 5.00 cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 650 COM Rack travel in mm: 20.0

Testina:

1st rack travel in: 14.00

rpm : 1045...1060 Speed

2nd rack travel in: 4.CD

: 1090...1120 Speed rpm

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

: 300 Speed rpm Rack travel in mm : 5.0

Testing:

: 100 Speed חכייו Minimum rack trave: 6.50 Speed : 300 TOTA

Rack travel in mm : 4.90...5.10

Rack travel in mm: 2.00 Speed : 360...400 מוכרו

TORQUE CONTROL

Dimension a mm : 0.20

Rack travel in m: 15.00...15.10

2nd speed rpm : 700

Rack travel in m: 15.50...15.70

Aneroid/Altitude Compensation Test

1st version

Setting

Speed : 500 **MCiri** Pressure hPa : 1200

Rack travel mm : 15.00...15.10

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.70...11.90

2nd pressure hPa : 110

Rack travel in m: 12.00...12.10

3rd pressure hPa : 470

Rack travel in m: 13.70...14.10

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 1000 Speed rom

Del.quantity cm3/: 241.0...247.0 1000 s: (238.0...250.0)

Aneroid pressure h: -

Speed rpm: 500 Del.quantity_cm3/: 134.0...136.0

1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.00

Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed CDW

Del.quantity cm3/: 210.0...230.0

1000 s: (206.0...234.0)

LOW IDLE

Speed rpm

Rack travel in mm : 4.80...5.20

Del.quantity cm3/: 17.0...23.0

1000 s: (14.0...26.0)

cm3 : 8.00 Spread

1000 s: (12,00)

Remarks:

: MAN-NR. 3-7050X

Setting and blocking of pointer of start-of-delivery sensor on syl. 6

start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.80...2.90 : (2.75...2.95) Prestroke mm Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Test sheet : RVI 9,8 a 6 Edition : 21.09.92 Replaces : 02.92 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 046 313 Tolerance + - * : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6P120A320RS419 EP type number : 0 412 026 037 rpm : 10501st speed Governor Governor design. : RQV275...1050PA495-8 Rack travel in mm : 10.40...10.50 Governer no. : 0 421 813 482 Del.quantity cm3/: 18.0...18.2 Customer-spec. information Customer : RVI 100 s: (17.7...18.5) Engine : MIDSO62045 Spread cm3 : 0.51st version kW : 169.0 100 s: (0.9) Pated speed : 2100 2nd speed rpm : 275.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 2.3...2.7 TEST BENCH REQUIREMENTS Test oil 100 s: (2.0...3.0) inlet temp. °C : 38...42 Spread cm3 : 0.8100 s: (1.2) Overflow valve : 1 419 992 118 (B) Setting of injection pump with governor Inlet press., bar : 1.50 GUIDE SLEEVE TRAVEL Test nozzle holder 1st speed rpm : 250 : 1 688 901 105 assembly travel mm : 1.00...1.20 rpm : 450 2nd speed Opening : 3.30...3.80 travel mm pressure, bar : 207...210 3rd speed : 800 mqn: travel mm : 5.70...6.00 Orifice plate : 1050 4th speed rpm diameter mm : 0,8 travel mm : 7.60...7.80 GUIDE SLEEVE POSITION Test lines : 1 680 750 089 Control-lever position Degree: -1 Outside diameter rpm : 1130 Speed x Wall thickness Rack travel in mm : 15.20...17.80 x Length mm : 8.00x2.50x600 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Speed rpm : 1050 per values ____ Aneroid pressure h: 700 : 180.5...182.5 Del.quantity 1000 : (177.5...185.5) BEGINNING OF DELIVERY Test pressure, bar: 25...27 Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 62...70

Testing:

1st rack travel in: 9.40

rpm : 1125...1135 Speed

2nd rack travel in: 4.10

Speed rpm : 1200...1230 4th rack travel in: 1350

Speed rom : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 8...16

Testing:

Speed rpm : 200

Minimum rack trave: 6.60

Speed rpm : 275
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION rpm : 275...390 Speed

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed MC : 500

hPa : 700 Pressure

Rack travel mm : 10.40...10.50

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.20...8.60

2nd pressure hPa : 360

Rack travel in m: 9.90...10.00

3rd pressure hPa : 160

Rack travel in m: 8.70...9.00

START CUT-OUT

Speed 1/min: 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650 Del.quantity cm3/ : 184.0...189.0 1000 s: (181.0...191.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 112.5...114.5

1000 s: (109.5...117.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 1125...1135

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 151.0...171.0 1000 s: (147.0...175.0)

LOW IDLE

Speed rpm : 275

Rack travel in mm : 5.20...5.40

Del.quantity cm3/: 23.5...27.5

1000 s: (20.5...30.5)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

Start-of-delivery mark 9.5° cam angle

after start of delivery cyl. 1

APPLICATION

Omnibus

D18

Note remarks

Test sheet : UNI 8,1 a 1 : 22.05.92 : 11.91 Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 046 346

Injection pump

Pump designation : PES6P110A720RS530 EP type number : 0 412 016 075

Governor

: RQV450...1000PA1016-Governor design.

: 0 421 813 967 Governer no.

Customer-spec. information Customer : IVECO-UNIC

Engine : 8365.25.532

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening:

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 9.80...9.90

Del.quantity cm3/: 11.6...11.8

100 s: (11.4...12.1)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 450.0 2nd speed Rack travel in mm : 5.4...5.8 Del.quantity cm3/ : 1.7...2.2 100 s: (1.4...2.4)

Spread cm3 : 0.4100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1095 1st speed

travel mm : 6.70...6.90 2nd speed : 450

LDW. : 0.70...1.10 travel mm

3rd speed : 700 rpm

3.30...3.90 travel mm

4th speed : 850 man

: 4.80...5.20 travel mm

5th speed : 1650 rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1430

Rack travel in mm : 8.50...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 700

Del.quantity : 116.5...118.5 1000 : (114.0...121.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 96...106

Testing:

1st rack travel in: 8.80

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

Speed rpm : 1195...1225 4th rack travel in: 1400

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 66...74

Testing:

Speed mom Minimum rack trave: 7.70

rpm : 450 Speed

Rack travel in mm : 5.50...5.70

Rack travel in mm: 2.00 Speed rom : 510 ... 570

Aneroid/Altitude

Compensator Test

1st version

Setting

rpm : 500 hPa : 700 Speed man Pressure

: 9.80...9.90 Rack travel mm

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.10...9.30

2nd pressure hPa : 400

Rack travel in m: 9.60...9.70

3rd pressure hPa : 380

Rack travel in m: 9.30...9.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm : 1050

Del.quantity cm3/: 113.0...117.0

1000 s: (110.0...120.0)

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 97.0...99.0

1000 s: (94.5...101.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.80

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 195.0...225.D

1000 s: (191.0...229.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : UNI 8,1 a 3 Edition : 22.01.92 Replaces : 12.91 Test oil : J.SO-4113

Combination no. : 0 402 046 347

Injection pump

Pump designation : PES6P110A720RS530 EP type number : 0 412 016 075

Governor

Governor design. : RQV450...1075PA1016

Governer no. : 0 421 813 968

Customer-spec. information Customer : IVECO-UNIC

: 8365,25,584 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1075

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 12.2...12.4

100 s: (11.9...12.6)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 450.0 2nd speed Rack travel in mm: 6.0...6.4 Del.quantity cm3/: 1.7...2.2 100 s: (1.4...2.4)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1135 1st speed travel mm

: 7.00...7.20 rpm : 450 2nd speed

: 0.70...1.10 travel mm

3rd speed rpm : 700 : 3.30...3.90 travel mm

: 950 4th speed rpm

: 5.60...6.00 travel mm

: 1650 5th speed rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1430

Rack travel in mm : 8.50...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1075 Speed

Aneroid pressure h: 700

Del.quantity : 122.0...124.0

1000 : (119.5...126.5)

: 4.00 Spread cm3 1000 : (7.50)

RATED SPEED

1st version Control Lever

position degrees: 96...104

Testina:

1st rack travel in: 9.80

rpm : 1130...1140 Speed

2nd rack travel in: 4.00

rpm : 1240...1270 Speed

4th rack travel in: 1450

rom : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 68...76

Testing:

rpm Speed : 350 Minimum rack trave: 9.00 rom : 450 Speed

Rack travel in mm : 6.10...6.30

Rack travel in mm: 2.00

Speed rpm : 490...550

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm Pressure hPa : 700

Rack travel mm : 10.80...10.90

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.40...9.60

2nd pressure hPa : 480

Rack travel in m: 10.40...10.50

3rd pressure hPa : 440

Rack travel in m: 9.90...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 700

Del.quantity cm3/: 126.0...130.0 1000 s: (123.0...133.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 93.0...95.0

1000 s: (90.5...97.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.80

rpm : 1130...1140 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 185.0...215.0

1000 s: (181.9...219.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : UNI 8,3 a 4 Edition : 25.09.92 Replaces : 11.91

Test oil : ISO-4113

Combination no. : 0 402 046 348

Injection pump

Pump designation : PES6P110A720RS530 EP type number : 0 412 016 075

Governor

: RQV450...1100PA1016 Governor design.

: 0 421 813 969 Governer no.

Customer-spec. information Customer : IVECO-UNIC

: 8365.25,533 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mn : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6Phasina : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 13.8...14.0

100 s: (13.5...14.2)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 450.0Rack travel in mm: 5.9...6.6 Del.quantity cm3/ : 1.7...2.2

100 s: (1.4...2.4)

Spread cm3 : 0.4100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1145 1st speed

6.80...7.00 travel mm 450 2nd speed

man travel mm

: 1.20...1.60

3rd speed rom : 700

travel mm : 3.30...3.90

4th speed : 950 CDM

: 5.50...5.90 travel mm

5th speed rpm : 1650

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1460

Rack travel in mm : 8.80...11.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

5peed rpm : 700 Aneroid pressure h: 700

Del.quantity : 138.0...140.0 1000 : (135.5...142.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Testing:

1st rack travel in: 10.10

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1260...1290 Speed

4th rack travel in: 1450

rpm : 0.00...1.00Speed

LOW IDLE 1

Control Lever

position degrees: 66...74

Testing:

Speed COM Minimum rack trave: 9.60

rpm : 450 Speed

Rack travel in mm : 6.00...6.20

CONSTANT REGULATION

rpm : 470...550 Speed

Ameroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 700 Pressure

: 11.10...11.20 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.10...10.30

2nd pressure hPa : 480

Rack travel in m: 10.80...10.90

3rd pressure hPa : 440

Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

rpm : 1100 Speed

Del.quantity cm3/: 133.0...137.0 1000 s: (130.0...140.0)

Aneroid pressure h: -

: 500 Speed rpm

Del.quantity cm3/: 111.0...113.0

1000 s: (108.5...115.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

rpm : 1140...1150 **Speed**

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 185.0...215.0 1000 s: (181.0...219.0)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.30...4.40 : (4.25...4.45) Prestroke mm Note remarks Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3 Test sheet : MB Edition : 21.09.92 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 046 807A Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation : PES6P110A820LS3131 EP type number : 0 412 016 715 BASIC SETTING Governor Governor design. : RQV300...1100PA916 1st speed rpm : 1100 Governer no. : 0 421 813 748 Rack travel in mm : 11.40...11.50 Customer-spec, information Customer : MERCEDES-BENZ Del.quantity cm3/ : 13.7...13.9 Engine : 0M447C 100 s: (13.4...14.1) 1st version kW : 177.0 Spread cm3 : 0.4Rated speed : 2200 100 s: (0.8) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0 Rack travel in mm : 7.6...7.8 Test oil inlet temp. "C : 38...42 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3) Overflow valve Spread cm3 : 0.4 : 1 417 413 025 100 s: (0.8) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Overflow quantity min. 1/h: 100...120 GUIDE SLEEVE TRAVEL 1st speed rpm : 300 Test nozzle holder : 1.10...1.40 travel mm : 0 681 343 009 assembly 2nd speed : 450 rpm : 3.40...3.80 : 1150 travel mm Opening 3rd speed CDM pressure, bar : 172...175 : 7.90...8.30 travel mm 4th speed rpm : 1225 travel mm : 9.10...9.70 Test lines : 1 680 750 089 GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 rpm : 1140 x Length mm : 8.00x2.50x600 Speed Rack travel in mm : 15.20...17.80 (A) Injection pump setting values Insp. values in parentheses FULL LOAD DELIV. AT FULL LOAD STOP Set equal delivery quant. per values 1st version Speed rpm : 1100 BEGINNING OF DELIVERY Del.quantity : 137.0...139.0

1000 : (134.5...141.5)

Test pressure, bar: 25...27

Spread cm3 : 4.00

1000 : (8.00)

RATED SPEED

1st version Control Lever

position degrees: 114...122

Testina:

1st rack travel in: 10.40

Speed rpm : 1140...1150 2nd rack travel in: 4.00

rpm : 1195...1225 Speed

4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1

Control Lever

position degrees: 85...93

Testina:

Speed : 200 rpm Minimum rack trave: 9.20

: 300 Speed rpm

Rack travel in mm : 7.60...7.80

CONSTANT REGULATION

rpm : 300...500 Speed

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 600 Speed

Del.quantity cm3/: 113.0...116.0

1000 s: (110.0...119.0)

cm3 : 5.00 Spread

1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.40

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 130.0...150.0

1000 s: (126,0...154,0)

Remarks:

Note remarks

Test sheet : IHC

: 21.09.92 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 046 837

Injection pump

Pump designation : PES6P100A320RS3304

EP type number : 0 412 006 702

Governor

Governor design. : RQV350...1200PA1037K

: 0 421 815 312 Governer no.

Customer-spec. information : NAVISTAR Customer

: DTA-466 Engine

1st version kill : 210.0 : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar : 2.50

Overflow

quantity min. 1/h: 240...260

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.35...3.45

(3.30...3.50)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 13.50...13.60

Del.quantity cm3/: 14.8...15.0

100 s: (14.6...15.2)

Spread cm3 : 0.4

100 s: (0.6)

rpm : 350.0 2nd speed

Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 2.1...2.5

100 s: (1.8...2.7)

cm3 : 0.6Spread 100 s: (0.8)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.40...1.60

2nd speed rpm : 500

: 3.20...3.60 travel mm

rpm : 800 3rd speed

travel mm : 5.60...6.00

4th speed rpm : 1265

travel mm : 8.70...8.90

5th speed : 1460 rpm

travel mm : 10.40...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200 Aneroid pressure h: 900

Del.quantity : 146.0...152.0)

Spread cm3: 4.00

1000 : (6.50)

RATED SPEED

1st version Control Lever

position degrees: 61...69

Testing:

1st rack travel in: 12.50

Speed mpm : 1240...1270

2nd rack travel in: 4.00

riom : 1430...1440 Speed

4th rack travel in: 1550

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 18...26

Testina:

Speed : 275 rom: Minimum rack trave: 7.20 : 350 rom

Rack travel in mm : 6.00...6.20

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 13.50...13.60

2nd speed rpm : 800

Rack travel in m: 13.40...13.60

3rd speed rpm : 650

Rack travel in m: 12.80...13.20

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed non : 800 hPa : 900 Pressure

: 13.40...13.60 Rack travel mm

Measurement

1/min: 800 Speed

1st pressure hPa : -

Rack travel in m: 8.20...8.60

2nd pressure hPa : 240

Rack travel in m: 9.60...9.70

3rd pressure hPa : 455

Rack travel in m: 12.10...12.50

START CUT-OUT

1/min : 290 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 74.0...78.0 1000 s: (72.0...80.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50

Speed rpm : 1240...1270

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 115.0...155.0

1000 s: (110.0...160.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 6.00...6.20 Del.quantity cm3/: 21.0...25.0

1000 s: (18.5...27.5)

Spread cm3 : 6.00

1000 s: (8.00)

Remarks:

: NAVISTAR #1818499091

Limit shutoff stop screw to 1.0 mm.

Bow dimension:

Sliding-sleeve position = 37.0 mm

Note remarks

Test sheet

: PER

Edition

: 21.09.92

Replaces

Test oil

: ISO-4113

Combination no.

: 0 402 046 840

Injection pump

Pump designation : PES6P120A320RS3307

EP type number

: 0 412 026 757

Governor

Governor design. : RQV250...950PA794~3

Governer no.

: 0 421 814 015

Customer

Customer-spec. information : PERKINS

Engine

: EAGLE TX 300/335

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 019

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test lines

: 1 680 750 067

Outside diameter

x Wall thickness

x Length mm

: 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.50...3.60 : (3.45...3.65)

Rack travel in mm : 12.00...13.00

E01

Firing order

: 1-4-2-6-3-5

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 900

Rack travel in mm : 14.60...14.70

Del.quantity cm3/: 22.3...22.5

100 s: (22.0...22.8)

Spread

cm3 : 0.6

100 s: (0.9)

2nd speed

rpm : 250.0

Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 1.3...1.7

100 s: (1.0...2.0) cm3 : 0.3

Spread

100 s: (0.6)

(B) Setting of injection pump

MCCU

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm

: 0.90...1.40

2nd speed

: 350 magn

travel mm

: 2.00...2.50

3rd speed travel mm : 660 : 3.70...4.20

4th speed

: 985 rpm

travel mm

: 7.40...7.60

5th speed travel mm

: 1260 man

: 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1110

Rack travel in mm : 10.00...12.60

FULL LOAD DELIV. AT FULL LOAD STOP

rpm : 900

Del.quantity : 223.0...228.0)

1st version

Speed

Aneroid pressure h: 1200

Spread

cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 113...121

Testina:

1st rack travel in: 11.30 Speed

rpm : 980...990

2nd rack travel in: 4.00

rpm : 1055...1085 Speed

4th rack travel in: 1200

rpm : 0.00...1.00 Spead

LOW IDLE 1

Control lever

position degrees: 78...86

Testing:

Speed rpm : 150

Minimum rack trave: 6.50

rpm : 250

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 250...450 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rom : 600 hPa : 1200 Pressure

Rack travel mm : 12.20...12.30

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 9.10...9.30

2nd pressure hPa : 340

Rack travel in m: 11.50...11.60 3rd pressure hPa : 220

Rack travel in m: 9.90...10.10

START CUT-OUT

1/min: 170 (190) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed

rpm : 600

Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

rpm : 980...990 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 130.0...170.0

1000 s: (126.0...174.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

E02

Note remarks

Test sheet

: DEE

Edition

: 21.09.92

Replaces

: 04.92

Test oil

: ISO-4113

Combination no. : 9 402 876 745

Injection pump

Pump designation : PES6P120A720RS3203

EP type number

: 0 412 026 728

Governor

Governor design.

: RSV625...1100P2A534

Governer no.

: 0 421 833 372

Customer-spec. information

Customer

: JOHN DEERE

Engine

: 6076 HZ 031

1st version kW

: 205.0

Rated speed

: 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 101

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0.6

Test Lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00x3.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm

: 3.55...3.65

: (3.50...3.70)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasina

: 0-60-120-180-240-300

Tolerance + - *

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1100

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 17.6...17.8

100 s: (17.4...18.0)

Spread

cm3 : 0.4

100 s: (0.6)

2nd speed

Spread

rpm : 625.0

Rack travel in mm: 5.4...5.6 Del.quantity cm3/: 2.7...3.1

100 s: (2.5...3.3)

cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1100

Aneroid pressure h: 1200

Del.quantity

: 176.5...178.5 1000 : (174.5...180.5)

cm3

: 4.00

Spread

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 42...50

E03

Testing:

1st rack travel in: 11.80

Speed rpm : 1140...1150

2nd rack travel in: 4.00

rom : 1205...1215 Speed

3rd rack travel in: 4.00

rpm : 1195...1225 Speed

4th rack travel in: 1350

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 22...30

Setting point w/out bumper spring

rpm : 625 Rack travel in mm : 5.0

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

rpm : 625

Rack travel in mm : 5.40...5.60

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 12.80...12.90

2nd speed rpm : 700 Rack travel in m: 13.40...13.60

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed חכיו hPa : 1200 Pressure

: 13.40...13.60 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 11.60...11.80

2nd pressure hPa : 645

Rack travel in m: 12.10...12.20

3rd pressure hPa : 840

Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 700

Del. quantity cm3/: 189.0...193.0 1000 s: (187.0...195.0)

Aneroid pressure h: -

Speed rom Del.quantity cm3/: 143.0...147.0

1000 s: (141.0...149.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

Speed rom : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 90.0...110.0 1000 s: (85.0...115.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 625

Rack travel in mm : 5.40...5.60

Del.quantity cm3/: 27.0...31.0

1000 s: (25.0...33.0)

cm3 : 6.001000 s: (8.00)

Remarks:

Spread

: JOHN DEERE # RE47399

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

Note remarks

Test sheet

: DEE Edition : 21.09.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 076 747

Injection pump

Pump designation : PES6P110A720RS3224-1

: 0 412 016 739 EP type number

Governor

Governor design. : RSV475...1100P2A534

-11

: 0 421 833 377 Governer no.

Customer-spec. information

Customer : JOHN DEERE

Engine : 6101 AT 001

1st version kW : 170.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 015 Test Lines

Outside diameter

x Wall thickness

x Length mm : 6.00x3.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05

: (2.90...3.10) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 13.30...13.40

Del.quantity cm3/: 16.2...16.4

100 s: (16.0...16.6)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 475.0

Rack travel in mm: 5.6...5.8 Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 600

Del.quantity : 162.0...164.0

1000 : (160.0...166.0)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testina: 1st rack travel in: 12,30 rpm : 1145...1155 Speed 2nd rack travel in: 4.00 rpm : 1200...1210 Speed 3rd rack travel in: 4.00 rpm : 1195...1225 Speed 4th rack travel in: 1350 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 16...24 Setting point w/out bumper spring rpm : 475 Rack travel in mm: 5.2 Testina: : 100 Speed rpm Minimum rack trave: 19.00 Speed rom : 475 Rack travel in mm : 5.60...5.80 TORQUE CONTROL Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 13.30...13.40 2nd speed rpm : 600 Rack travel in m: 14.10...14.30 Aneroid/Altitude Concensator Test 1st version Setting Speed : 500 man Pressure hPa : 600 Rack travel mm : 14.10...14.30 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 11.90...12.10 2nd pressure hPa : 265 Rack travel in m: 13.30...13.40 3rd pressure hpa : 135 Rack travel in m: 12.30...12.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 600 Speed rpm : 600

Del.quantity cm3/: 177.0...181.0

: 500

Aneroid pressure h: -

ripm

1000 s: (175.0...183.0)

Del.quantity cm3/: 130.5...134.5 1000 s: (128.5...136.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.30 Speed rpm : 1145...1155 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 125.0...145.0 1000 s: (120.0...150.0) Rack travel in mm: 19.00...21.00 LOW IDLE rpm : 475 Speed Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3 : 6.001000 s: (8.00) Remarks: : JOHN DEERE # RE51966 Starting/full-load transition speed from holding magnet = 450 1/min. Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1 Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer. APPLICATION Wheel loader

Speed

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.50...3.60 Prestroke mm : (3.45...3.65) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Test sheet : LIE Edition : 21.08.92 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 075 748A Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PES6P110A720RS3305 EP type number : 0 412 016 740 BASIC SETTING Governor Governor design. : RSV300...1100P1A555 1st speed rom: 1000 Governer no. : 0 421 833 379 Rack travel in mm : 15.30...15.40 Cust. part no. : 9271056 Del.quantity cm3/: 18.3...18.5 Customer-spec, information Customer : LIEBHERR 100 s: (18.0...18.7) Engine : D 926 TI Spread cm3 : 0.41st version kW : 210.0 100 s: (0.7) : 2200 Rated speed 2nd speed rpm : 400.0Rack travel in mm: 7.3...7.5 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.0...1.6 Test oil 100 s: (0.7...1.8) inlet temp. °C : 38...42 Spread cm3 : 0.4100 s: (0.7) Overflow valve : 1 417 413 025 GUIDE SLEEVE POSITION Control-lever position Inlet press., bar: 1.50 Degree: -3 rpm : 800 Speed Test nozzle holder Rack travel in mm : 0.30...0.70 assembly : 0 681 343 009 Governor spring pre-tension Opening Click setting x : ? : 172...175 pressure, bar FULL LOAD DELIV. AT FULL LOAD STOP Test lines : 1 680 750 089 1st version Speed rpm : 1000 Outside diameter Aneroid pressure h: 1300 x Wall thickness : 183.0...185.0 Del.quantity 1000 : (180.5...187.5) x Lenath mm : 8.00x2.50x600 Spread cm3 : 4.00 (A) Injection pump setting values 1000 : (7.50) Insp. values in parentheses Set equal delivery quant. RATED SPEED per values 1st version BEGINNING OF DELIVERY Control lever Test pressure, bar: 25...27 position degrees: 96...104

Testing:

1st rack travel in: 14.30 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 rpm : 1080...1110 Speed 3rd rack travel in: 4.00 rpm : 1115...1145 Speed 4th rack travel in: 1260 riom : 0.30...1.40 Speed LOW TOLE 1 Control lever position degrees: 69...77 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 6.9 Speed rpm : 400 Rack travel in mm : 7.30...7.50 Rack travel in mm : 2.00 rpm : 560...620 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed riom : 1000 Rack travel in m: 15.30...15.40 2nd speed rpm : 500 Rack travel in m: 15.30...15.50 Aneroid/Altitude Compensator Test ist version Setting Speed : 550 COM hPa : 1300 Pressure Rack travel mm : 15.30...15.40 Measurement 1/min : 550 Speed 1st pressure hPa : -Rack travel in m: 13.40...13.60 2nd pressure hPa : 510 Rack travel in m: 13.70...13.80 3rd pressure hPa : 640 Rack travel in m: 14.90...15.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 550 Speed Del.quantity cm3/: 149.0...151.0 1000 s: (146.5...153.5) BREAKAWAY

1mm rack travel less than

full load rack tr: 14.30

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 145.0...165.0

1000 s: (141.0...169.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 7.30...7.50 Del.quantity cm3/: 10.0...16.0 1000 s: (7.5...18.5)

Spread cm3 : 4.50

1000 st (7.50)

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Remarks:

E08

1st version

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.50...3.60 : (3.45...3.65) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks Test sheet : LIE : 21.09.92 Edition Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 076 748B Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PES6P110A720RS3305 EP type number : 0 412 016 740 BASIC SETTING Governor Governor design. : RSV300...1100P1A555 rpm: 900 1st speed : 0 421 833 379 Governer no. Rack travel in mm : 15.00...15.10 Cust. part no. : 9273248 Del.quantity cm3/: 17.8...18.0 Customer spec. information Customer : LIEBHERR 100 s: (17.5...18.2) Engine : D 926 TI Spread cm3 : 0.41st version kW : 200.0 100 s: (0.7) Rated speed : 2200 rpm : 400.0 2nd speed TEST BENCH REQUIREMENTS Rack travel in mm: 7.3...7.5 Del.quantity cm3/: 1.0...1.6 Test oil 100 s: (0.7...1.8) inlet temp. °C : 38...42 Spread cm3 : 0.4100 s: (0.7) Overflow valve : 1 417 413 025 GUIDE SLEEVE POSITION Control-lever position Inlet press., bar: 1.50 Degree: -3 rpm : 800 Speed Test nozzle holder Rack travel in mm : 0.30...0.70 : 0 681 343 009 assembly Governor spring pre-tension Opening Click setting x :? pressure, bar : 172...175 FULL LOAD DELIV. AT FULL LOAD STOP Test lines : 1 680 750 089 1st version Speed rpm : 900 Outside diameter Aneroid pressure h: 1300 Del.quantity 1000 x Wall thickness : 178.0...180.0 x Length mm : 8.00X2.50X600 : (175.5...182.5) cm3 : 4.00 Spread (A) Injection pump setting values 1000 : (7.50) Insp. values in parentheses Set equal delivery quant. RATED SPEED per values 1st version BEGINNING OF DELIVERY Control lever Test pressure, bar: 25...27 position degrees: 96...104

Testing:

1st rack travel in: 14.00 rpm : 920...930 Speed 2nd rack travel in: 4.00 Speed : 955...985 rpm 3rd rack travel in: 4.00 rom : 985...1005 Speed 4th rack travel in: 1260 Speed rpm : 0.30...1.40 LOW IDLE 1 Control Lever position degrees: 69...77 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 6.9 : 400 Speed rpm Rack travel in mm : 7.30...7.50 Rack travel in mm : 2.00 Speed rpm : 560...620 TORQUE CONTROL Torque control curve - 1st version riom : 900 1st speed Rack travel in m: 13.60...13.70 2nd speed rpm : 500 Rack travel in m: 13.60...13.80 Aneroid/Altitude Compensator Test 1st version Settina Speed : 550 rom hPa : 1300 Pressure Rack travel mm : 15.00...15.10 Measurement 1/min: 550 Speed 1st pressure hPa : -Rack travel in m: 13.80...14.00 2nd pressure hPa : 550 Rack travel in m: 14.10...14.20 3rd pressure hPa : 650 Rack travel in m: 14.60...14.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 550 Speed Del.quantity cm3/: 164.0...166.0 1000 s: (161.5...168.5) **BREAKAWAY**

1mm rack travel less than full load rack tr: 14.00

Speed rpm : 920...930

STARTING FUEL DELIVERY

Speed rom : 100 Del.quantity cm3/ : 145.0...165.0 1000 s: (141.0...169.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 7.30...7.50 Del.quantity cm3/: 10.0...16.0

1000 s: (7.5...18.5)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

:

E10

1st version

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : FIA 12,9 c Edition : 21.09.92 Replaces : 02.90 Test oil : ISO-4113 Combination no. : 0 402 636 800 Injection pump Pump designation: PE6P130A720/3LS7827 EP type number : 0 412 636 814 Governor Governor design. : RQV400...1150PA937 : 0 421 813 823 Governer no. Customer-spec. information Customer : IVECO-FIAT : 8262.43.001 Engine TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 105 assembly Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test Lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 5.10...5.20 : (5.05...,5.25) Rack travel in mm : 9.00...12.00

Firing order : 1-6-5-4-3-2 Phasing : 0-75-120-195-240-315 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1150 Rack travel in mm : 11.70...11.80 Del.guantity cm3/: 26.8...27.1 100 s: (26.4...27.4) Spread cm3 : 0.6100 s: (1.0) rpm : 400.0 2nd speed Rack travel in mm: 4.8...5.2 Del.quantity cm3/: 2.1...2.7 100 s: (1.7...3.1) Spread cm3 : 1.0100 s: (1.4) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 400 1st speed travel mm : 2.60...3.00 2nd speed rpm : 500 : 4.20...4.80 travel mm 3rd speed rpm : 650 : 5.80...6.40 travel mm 4th speed rpm : 900 : 6.70...7.00 travel mm : 1350 5th speed rpm : 11.00...12.00 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 850 Rack travel in mm : 16.50...18.50 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1150 Aneroid pressure h: 1200 Del.quantity : 268.0...271.0 1000 : (264.5...274.5)

Spread cm3 : 6.00 1000 : (10.00)

RATED SPEED

1st version Control lever

position degrees: 106...114

lesting:

1st rack travel in: 10.70 rpm : 1190...1200 Speed

2nd rack travel in: 4.00

rom : 1240...1270 Speed

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 63...71

Testina:

Speed : 100 COM Minimum rack trave: 6.50 rpm : 400 Speed

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 400...550

Ameroid/Altitude Compensator Test

1st version Setting

Speed : 500 rpm Pressure hPa : 1200

Rack travel mm : 11.70...11.80

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.50...8.70

2nd pressure hPa : 650

Rack travel in m: 10.70...10.80 3rd pressure hPa : 250

Rack travel in m: 9.20...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm: 700 Del.quantity cm3/: 275.0...282.0 1000 s: (271.5...285.5)

Aneroid pressure h: -

: 500 Speed rom

Del.quantity cm3/: 165.0...168.0

1000 s: (161.5...171.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70

Speed rpm : 1190...1200

LOW IDLE

Speed rpm : 400 Rack travel in mm : 4.80...5.20 Del.quantity cm3/: 21.0...27.0 1000 s: (17.0...31.0)

cm3 : 10.00 Spread

1000 s: (14.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

APPLICATION

Special-purpose vehicle

E12

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : STE : 21.09.92 Edition Replaces : 05.92 Test oil : ISO-4113

Combination no. : 0 402 638 807

Injection pump

Pump designation : PE8P12OA12OLS7127 EP type number : 0 412 628 817

Governor

Governor design: RQ300/1100PA134-3 : 0 421 801 655 Governer no.

Customer-spec. information Custemer : SNF

Engine : WD 815.72/73

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values __

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1- 5- 4- 8- 6- 3-7- 2 Firing order

Phasing : 0-45-90-135-180-225-270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 1100

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 20.5...20.7

100 s: (20.2...21.0)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 6.4...7.0 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8 Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position Degree: -1

Speed rpm : 600

Rack travel in mm : 15.40...16.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 1200

Del.quantity : 203.0...210.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 16.0

Testing:

1st rack travel in: 12.80

rpm : 1145...1160 Speed

2nd rack travel in: 4.00

nor: : 1230...1260 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm: 6.7

Testing:

: 200 Speed rpm Minimum rack trave: 8.20 Speed rpm : 300

Rack travel in mm : 6.60...6.80

Rack travel in mm: 2.00

Speed rpm : 400...440

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 ngn. Pressure hPa : 1200

: 13.80...13.90 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.10...10.40

2nd pressure hPa : 790

Rack travel in m: 12.80...12.90

3rd pressure hPa : 490

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 142.0...144.0 1000 s: (139.0...147.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 180.0...210.0

1000 s: (176.0...214.0)

Rack travel in mm: 15.00...16.00

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm,

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring pretoad on new delivery-valve holders

to 2.9...3.1 mm.

Note remarks

Test sheet : STE

: 21.09.92 Edition Replaces : 05.92

Test oil : ISO-4113

Combination no. : 0 402 638 808

Injection pump

Pump designation : PE8P120A120LS7127

EP type number : 0 412 628 817

Governor

Governor design. : RQV250...1100PA785-3

: 0 421 814 004 Governer no.

Customer-spec. information Customer : SNF

Engine : WD 815.72/73

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening |

pressure, bar : 207...210

Orifice plate

diameter ma : 0,8

Test lines : 1 680 750 089

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1-5-4- 8- 6- 3-7-2 Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed ripm: 1100

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 20.5...20.7

100 s: (20.2...21.0)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...7.2

Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

cm3 : 0.3 Spread

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 0.90...1.40 travel mm

2nd speed rpm : 355 travel mm

: 1.70...2.20 3rd speed rpm : 410

travel mm : 2.20...2.70

4th speed rpm: 1150

: 8.30...8.70 travel mm

rpm : 1390 5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1220

Speed

Rack travel in mm : 11.50...14.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 1200

: 205.0...207.0 Del.quantity

1000 : (202.0...210.0)

Spread : 5.00 cm3 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 103...111

Testing:

1st rack travel in: 12.80

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1250...1280

4th rack travel in: 1350

Speed rom : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 70...78

Testina:

Speed : 150 rpm Minimum rack trave: 8.80 : 250 Speed **CDM**

Rack travel in mm : 6.80...7.00

CONSTANT REGULATION

Speed rpm : 350...420

Anemoid/Altitude Compensator Test

1st version

Settina

: 500 Speed rpm Pressure hPa : 1200

Rack travel mm : 13.80...13.90

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.10...10.40

2nd pressure hPa : 790 Rack travel in m: 12.80...12.90

3rd pressure hPa : 520

Rack travel in m: 10.70...10.90

START CUT-OUT

1/min : 170 (190) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed rpm : 500

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

Speed rpm : 1140...1150

Del.quantity cm3/: 142.0...144.0

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 180.0...210.0

1000 s: (176.0...214.0)

1000 s: (139.0...147.0)

Rack travel in mm : 15.00...16.00

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

•

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

Note remarks

Test sheet : MB

Edition : 21.09.92

Replaces

Test oil : ISO-4113

: 0 402 640 841 Combination no.

Injection pump

Pump designation: PE12P120A320LS7855

EP type number : 0 412 620 835

Governor

Governor design. : RQ400/1065PA1024 : 0 421 801 634 Governer no.

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 485.0 Rated speed : 2130

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 9.00...12.00

Firing order : 12- 1- 5- 9- 8- 3-

4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-

180-225-240-285-300-

345

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

rpm: 1065 1st speed

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 21.1...21.3

100 s: (20.8...21.6)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 400.0 2nd speed Rack travel in mm: 4.8...5.4

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 Speed

rpm : 600 Rack travel in mm : 14.60...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1065 Aneroid pressure h: 1000

: 211.0...213.0 Del.quantity

1000 : (208.0...216.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed L DW Rack travel in mm: 15.9 Testing: 1st rack travel in: 12.90 rpm : 1110...1125 Speed 2nd rack travel in: 4.00 Speed rpm : 1180...1210 4th rack travel in: 1300 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 5.1 Testing: Speed rpm : 300 Minimum rack trave: 7.20 rpm : 400 Speed Rack travel in mm : 5.00...5.20 Rack travel in mm: 2.00 Speed FDIT : 465...505 Ameroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 Pressure hPa : -Rack travel mm : 10.80...11.10 Measurement Speed 1/min : 500 1st pressure hPa : 350 Rack travel in m: 11.50...11.70 2nd pressure hPa : 500 Rack travel in m: 12.80...13.00 START CUT-OUT 1/min: 320 (340) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 600 Del.quantity cm3/: 205.0...209.0 1000 s: (202.0...212.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 144.0...146.0

1000 s: (141.0...149.0)

Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.90 Speed rpm : 1110...1125

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 210.0...230.0 1000 s: (206.0...234.0)

Remarks:

APPLICATION

Rail can

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 5.00...5.10 : (4.95...5.15) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Test sheet : UNI **Fdition** : 05.10.92 Replaces Test oil : ISO-4113 Phasina : 9-60-120-180-240-300 Combination no. : 0 402 646 605 Tolerance + - * : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PE6P130A720RS7197 EP type number : 0 412 636 815 BASIC SETTING Governor Governor design. : RQV300...1000PA946-2 rpm: 1000 1st speed : 0 421 814 021 Governer no. Rack travel in mm : 11.90...12.00 Customer-spec. information Customer : IVECO-UNIC Del.quantity cm3/: 21.2...21.4 100 s: (20.9...21.7) Engine : 8210,22,800 1st version kW : 224.0 Spread cm3 : 0.5: 2000 Rated speed 100 s: (0.8) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0 Rack travel in mm : 5.0...5.4 Del.quantity cm3/ : 1.9...2.5 Test oil inlet temp. °C : 38...42 100 s: (1.5...2.9) Overflow valve cm3 : 0.8 Spread : 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 105 assembly GUIDE SLEEVE TRAVEL rpm : 1045 1st speed Opening : 8.30...8.50 travel mm : 207...210 pressure, bar rpm : 300 2nd speed : 1.10...1.30 travel mm Orifice plate 3rd speed rpm : 400 diameter mm : 0,8 : 2.30...2.90 travel mm 4th speed : 700 man : 4.90...5.50 travel ma Test Lines : 1 680 750 075 : 1350 5th speed rpm : 11.00...12.00 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 8.00x2.50x1000 Control-lever position Degree: -1

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

1st version Speed rpm : 1000 Del.quantity : 212.0...214.0

1000 : (209.0...217.0)

: 5.00 Spread cm3 1000 : (8.00)

RATED SPEED

1st version Control Lever

position degrees: 111...119

Testing:

1st rack travel in: 10.90

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1130...1160

4th rack travel in: 1350

rom : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 60...68

Testing:

Speed : 100 nom Minimum rack trave: 6.70

: 300 Speed LDW

Rack travel in mm : 5.10...5.30

Rack travel in mm: 2.00

Speed rpm : 390...430

CONSTANT REGULATION

: 410...530 Speed mcm

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm Pressure hPa : 900

: 11.90...12.00 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.10...10.30

2nd pressure hPa : 360

Rack travel in m: 11.50...11.60

3rd pressure hPa : 265

Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 : 550 Speed COM

Del.quantity cm3/: 214.0...220.0

1000 s: (211.0...223.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 161.0...163.0 1000 s: (158.0...166.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed : 100 mon

Del.quantity cm3/: 220.0...260.0

1000 s: (216.0...264.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 5.00...5.40

Del.quantity cm3/: 19.0...25.0 1000 s: (15.0...29.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

Test sheet : MB

Edition : 21.09.92

Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 646 796

Injection pump

Pump designation : PE6P120A320LS7858

EP type number : 0 412 626 875

Governor

Governor design. : RQ300/1050PA1030-5

Governer no. : 0 421 801 665

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 200.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed pm: 1050

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 18.9...19.1

100 s: (18.6...19.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.3...5.9 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm: 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1050

Aneroid pressure h: 800

Del.quantity : 189.0...191.0

1000 : (186.0...194.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 20.0

Testing: 1st rack travel in: 10.70 rpm : 1090...1105 Speed 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring Speed Rack travel in mm: 5.6 Testing: Speed **FIXE** : 200 Minimum rack trave: 8.40 Speed rpm : 300 Rack travel in mm : 5.50...5.70 Rack travel in mm : 2.00 Speed COM : 370...410 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : -: 9.70...10.00 Rack travel mm Measurement 1/min : 500 Speed 1st pressure hPa : 200 Rack travel in m: 10.10...10.20 2nd pressure hPa : 350 Rack travel in m: 10.80...11.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 800 Speed : 1050 וווכןיו Del.quantity cm3/: 181.0...185.0 1000 s: (178.0...188.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -Speed : 500 COM Del.quantity cm3/: 126.0...128.0 1000 s: (123.0...131.0) Spread cm3 : 8.00 1000 s: (12.0)

1st version 1mm rack travel less than

full load rack tr: 10.70

Speed rpm : 1090...1105

Remarks:

BREAKAWAY

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB : 21.09.92 Edition Replaces Test oil : ISO-4113 Combination no. : 0 402 646 797 Injection pump Pump designation : PE6P120A320LS7858 EP type number : 0 412 626 875 Governor Governor design. : RQ300/1050PA1030-4 Governer no. : 0 421 801 664 Customer-spec, information Customer : MERCEDES-BENZ Engine : 0M401 LA : 180.0 1st version kW Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. 'C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 1 688 901 105 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,8

Test lines : 1 680 750 075 Outside diameter x Wall thickness x Length mm : 8.00x2.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ___ E23

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 5.50...5.60 : (5.45...5.65) Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1 Phasing : 0-60-120-180-240-300 Tolerance + - * : 0.50 (0.75) Time to cyl. no. : 6 BASIC SETTING 1st speed rkm : 1050 Rack travel in mm : 11.10...11.20 Del.quantity cm3/: 17.0...17.2 100 s: (16.7...17.5) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 300.0Rack travel in mm: 5.3...5.9 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) cm3 : 0.6Spread 100 s: (1.0) GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 600 Speed Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1050 Aneroid pressure h: 700 : 170.0...172.0 Del.quantity 1000 : (167.0...175.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Setting point:

Speed

rpm Rack travel in mm : 20.0 Testing:

1st rack travel in: 10.10

Speed rpm : 1090...1105

2nd rack travel in: 4.00

rpm : 1165...1195 Speed

4th rack travel in: 1300

rpm : 0.00...1.50 Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 5.6

Testing:

Speed rpm : 200 Minimum rack trave: 8.00

rpm : 300 Speed

Rack travel in mm: 5.50...5.70 Rack travel in mm: 2.00 Speed rpm: 360...400

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm

Pressure hPa : -

: 10.00...10.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 200

Rack travel in m: 10.20...10.30

2nd pressure hPa : 700

Rack travel in m: 11.10...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

: 550 Speed rpm -

Del.quantity cm3/: 160.0...164.0 1000 s: (157.0...167.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: -

: 500 Speed COM

Del.quantity cm3/: 130.0...132.0

1000 s: (127.0...135.0)

cm3 : 8.00 Spread

1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10

Speed rom : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 50.0...80.0

1000 s: (46.0...84.0)

Rack travel in mm : 10.00...10.30

.

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB : 21.09.92 Edition : 07.92 Replaces Test oil : ISO-4113 Combination no. : 0 402 646 798 Injection pump Pump designation : PE6P120A320LS7854 EP type number : 0 412 626 872 Governor Governor design. : RQV350...950PA870-17 : 0 421 814 005 Governer no. Customer-spec. information Customer : MERCEDES-BENZ : 0M441 1A Engine : 250.0 1st version kW : 1900 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. *C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder assembly : 1 688 901 105 Opening. pressure, bar : 207...210 Orifice plate diameter mm : 0.8

Test lines : 1 680 750 075 Outside diameter x Wall thickness x Length mm : 8.00x2.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ___

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 5.20...5.30 : (5.15...5.35) Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1 Phasing : 0-60-120-180-240-300 Tolerance + - * : 0.50 (0.75) Time to cyl. no. BASIC SETTING 1st speed rpm: 950 Rack travel in mm : 14.50...14.60 Del.quantity cm3/: 25.1...25.3 100 s: (24.8...25.6) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 350.0Rack travel in mm : 5.1...5.7 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5) cm3 : 0.6 Spread 100 s: (1.0) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 350 : 1.30...1.80 travel mm 2nd speed 570 rpm : : 3.90...4.40 travel mm 3rd speed rpm : 850 travel mm : 5.70...6.20 4th speed : 1008 rpm travel mm : 7.40...7.90 5th speed : 1110 rpm : 9.80...10.30 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1080 Speed Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 950 Speed Aneroid pressure h: 1200

Del.quantity ; 251.0...256.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 113...121

Testina:

1st rack travel in: 13.50 rpm : 990...1000 Speed

2nd rack travel in: 4.00 rpm : 1070...1100 Speed

4th rack travel in: 1300

Speed rpm : 0.00...1.40

LOW IDLE 1 Control Lever

position degrees: 63...71

Testing:

: 250 Speed mon Minimum rack trave: 7.70 rpm : 350

Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

rpm : 350...450 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 L DW Pressure hPa : -

Rack travel mm : 10.10...10.40

Measurement

1/min: 500 Speed

1st pressure hPa : 350

Rack travel in m: 11.40...11.50

2nd pressure hPa : 600

Rack travel in m: 12.60...12.80

START CUT-OUT

Speed 1/min: 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 600

Del.quantity cm3/: 263.0...267.0 1000 s: (260.0...270.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: ~

Speed rpm : 500 Del.quantity cm3/ : 135.0...137.0

1000 s: (132.0...140.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50

Speed : 990...1000 rom

STARTING FUEL DELIVERY

Speed rpm ; 100

Del.quantity cm3/: 240.0...260.0

.

1000 s: (236.0...264.0)

Remarks:

APPLICATION

Pistenbully

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet

: SCA : 21.09.92 Edition Replaces : 07.92 Test oil : ISO-4113

Combination no. : 0 402 646 910

Injection pump

Pump designation : PE6P120A320RS7138 EP type number : 0 412 626 822

Governor

Governor design. : RQV200...1100PA712-5

: D 421 813 951 Governer no.

Customer-spec. information Customer : SCANIA

Engine : DS9 08

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 104

Opening

: 250...253 pressure, bar

Orifice plate

diameter mm : 0.7

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50 : (4.35...,4.55) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm: 13.00...13.10

Del.quantity cm3/: 18.0...18.2

100 s: (17.7...18.5)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 1.2...1.6

100 s: (-) cm3 : 0.5Spread 100 s: (0.9)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 225 1st speed

travel mm : 0.90...1.30

rpm : 350 2nd speed travel mm : 2.50...3.10

3rd speed rpm : 650 travel mm : 5.40...6.00

4th speed rpm : 1145

travel mm : 8.90...9.10

rpm : 1280 5th speed

: 10.10...10.50 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 900

Del.quantity : 180.0...182.0 1000 : (177.0...185.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 114...122

Testina:

1st rack travel in: 12.00

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1275...1305 4th rack travel in: 1400

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever position degrees: 61...69

Testing:

Speed rpm : 100 Minimum rack trave: 6.50

Speed rpm : 250 Rack travel in mm : 4.90...5.10

Rack travel in mm: 2.00

Speed rom : 300...360

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom Pressure hPa : 900

Rack travel mm : 13.00...13.10

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.30

2nd pressure hPa : 480

Rack travel in m: 12.30...12.40

3rd pressure hPa : 220

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 Speed rpm : 1100

Del.quantity cm3/: 163.0...171.0

1000 s: (161.0...173.0)

Aneroid pressure h: -

Speed : 500 rpm

Del.quantity cm3/: 114.0...118.0

1000 s: (112.0...120.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 120.0...140.0

1000 s: (-)

Rack travel in mm : 9.90...10.30

LOW IDLE

Speed rpm : 250 Rack travel in mm : 4.90...5.10

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Start-of-delivery setting with ROBO

diaphragm.

Note remarks

Test sheet : MB 11,0 t12 Edition : 21.09.92 Replaces : 05.91 Test oil : ISO-4113

Combination no. : 0 402 646 945

Injection pump

Pump designation : PE6P120A320LS7808-2

EP type number : 0 412 626 833

Governor

Governor design. : RQV350...950PA870-11

: 0 421 813 928 Governer mo.

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M447 LA

1st version kW : 243.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyt. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.90...14.10

Del.quantity cm3/: 21.4...21.6

100 s: (21.1...21.9)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.1...5.7 Deliquantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.30...1.80 travel mm

rom : 570 2nd speed

: 3.90...4.40 travel mm

3rd speed rpm : 850

travel mm : 5.70...6.20

4th speed rpm : 1008

travel mm : 7.40...7.90 5th speed : 1110

rpm : 9.60...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1060

Rack travel in mm : 12.50...15.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 600 Speed 1/min: 270 (290) Speed Aneroid pressure h: 900 Del.quantity : 214.0...216.0 FUEL DELIVERY CHARACTERISTICS 1000 : (211.0...219.0) : 5.00 Spread cm3 1000 : (9.00) 1st version Aneroid pressure h: 1350 RATED SPEED Speed : 950 rom Del.quantity cm3/: 240.0...243.0 1st version 1000 s: (237.0...245.0) Control Lever : 8.00 Spread cm3 position degrees: 111...119 1000 s: (12.0) Aneroid pressure h: 1350 Testina: rpm : 800 1st rack travel in: 13.80 Del.quantity cm3/: 237.0...241.0 rpm : 990...1000 Speed 1000 s: (234.0...244.0) 2nd rack travel in: 4.00 Spread cm3 : 8.00 : 1065...1095 Speed non 1000 s: (12.00 4th rack travel in: 1300 Aneroid pressure h: 1350 Speed rpm : 0.00...1.00Speed : 950 L(DIL) Del.quantity cm3/: 200.0...202.0 * LOW IDLE 1 1000 s: (197.0...205.0) Control Lever Spread cm3 : 8.00 position degrees: 63...71 1000 s: (12.0) Aneroid pressure h: -Testina: Speed : 500 rom Speed : 200 Del.quaritity cm3/: 145.0...147.0 npm Minimum rack trave: 7.30 1000 s: (142.0...150.0) cm3 : 8.00 rom : 350 Spread Rack travel in mm : 5.10...5.70 1000 s: (12.0) CONSTANT REGULATION Speed rpm : 350...600 **BREAKAWAY** Aneroid/Altitude 1st version Compensator Test 1mm rack travel less than full load rack tr: 13.80 1st version Speed rpm : 990...1000 Settina Speed : 600 mc₁ STARTING FUEL DELIVERY Pressure hPa 900 : 13.90...14.10 Rack travel m Speed : 100 man Measurement Del.quantity cm3/: 205.0...225.0 Speed 1/min: 600 1000 s: (201.0...229.0) 1st pressure hPa : 300 Remarks: Rack travel in m: 11.00...11.20 2nd pressure hPa : 550 Rack travel in m: 13.10...13.30 3rd pressure hPa : 1100 Rack travel in m: 14.10...14.30 * = Set at reduced-delivery stop. 4th pressure hPa : 1200 Rack travel in m: 14.50...14.70 5th pressure hPa : -Rack travel in m: 9.50...9.80 START CUT-OUT

F₀2

Note remarks

: PEN 7,2 a Test sheet : 21.09.92 Edition Replaces : 10.91 Test oil : ISO-4113

Combination no. : 0 402 646 948

Injection pump

Pump designation: PE6P120A320RS7233-1 EP type number : 0 412 626 849

Governor

Governor design. : RQV300...1300PA1003K

Governer no. : 0 421 815 281

Customer-spec. information Customer : PENTA

: TAMD 72 A Engine

1st version kW : 316.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.30...3.40 Prestroke mm

: (3.25...3.45)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 24.9...25.1

100 s: (24.6...25.4)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 290.0 Rack travel in mm : 5.8...6.0

Del.quantity cm3/: 1.5...2.1

100 s: (1.3...2.3) cm3 : 0.7

Spread

100 s: (1.1)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

: 1.30...1.50 travel mm

rpm : 325 2nd speed

: 2.00...2.20 travel mm

3rd speed rpm : 475

travel mm : 3.20...3.40

4th speed rpm : 890

travel mm : 6.30...6.50

rpm : 1350 5th speed

travel mm : 9.90...10.10

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1500 Speed

Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 1300Aneroid pressure h: 2400

Del.quantity : 249.0...251.0 1000 : (246.0...254.0) : 6.00 Spread cm3 1000 : (10.00) RATED SPEED 1st version Control lever position degrees: 118...126 Testing: 1st rack travel in: 12.80 Speed rpm : 1335...1345 2nd rack travel in: 4.00 Speed rpm : 1460...1490 4th rack travel in: 1550 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 75...79 Testing: Speed : 100 חכרו Minimum rack trave: 7.00 Speed rpm : 290 Rack travel in mm : 5.80...6.00 CONSTANT REGULATION Speed rpm : 300...520 TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 13.80...13.90 2nd speed rpm : 1200 Rack travel in m: 13.40...13.70 3rd speed rpm : 1000 Rack travel in m: 12.30...12.70 4th speed rpm : 800 Rack travel in m: 11.40...11.60 Aneroid/Altitude Compensator Test 1st version Setting Speed : 1300 rom hPa : 2400 Pressure : 13.80...13.90 Rack travel mm Measurement Speed 1/min: 1300

Rack travel in m: 7.40...7.50 3rd pressure hPa : 1250 Rack travel in m: 13.20...13.40 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 2400 : 800 MON Del.quaritity cm3/: 233.0...239.0 1000 s: (231.0...241.0) cm3 : 9.00 Spread 1000 s: (13.0) Aneroid pressure h: 2400 : 1000 Speed rpm Del.quantity cm3/: 240.0...248.0 1000 s: (238.0...250.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 112.0...114.0 1000 s: (109.0...117.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.80 rpm : 1335...1345 Speed LOW IDLE Speed nom : 290 Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 15.0...21.0 1606 s: (13.0...23.0) cm3 : 7.00Spread 1000 s: (11.00) Remarks: : Start-of-delivery setting with ROBO diaphragm.

1st pressure hPa : -

2nd pressure hPa : 270

Rack travel in m: 7.20...7.50

Note remarks

Test sheet : DAF

Edition : 05.10.92

Replaces : 03.92 Test oil : ISO-4113

Combination no. : 0 402 646 968

Injection pump

Pump designation : PE6P120A320RS7248

EP type number : 0 412 626 861

Governor

Governor design. : RQV275 ... 1150PA986

Governer no. : 0 421 813 920

Customer—spec. information Customer : DAF

Customer : DAF

Engine : RS 222 L

1st version kW : 222.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar : 1.50

Overflow

quantity min. 1/h: 120...140

Test nozzle holder

assembly : 1 688 901 105

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 14.00...15.00 Firing order : 1-5-3-6-2-4

Phasing : 0-30-120-180-240-300

Tolerance $+ - \cdot : 0.50 (0.75)$

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 11.7...12.7 Difference * CS : 2.25...3.75

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 18.4...18.6

100 s: (18.1...18.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm: 275.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/: 1.3...1.9 100 s: (1,0...2.2)

Spread cm3: 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

travel mm : 1.20...1.60

2nd speed rpm : 315

travel mm : 1.80...2.20

3rd speed rpm: 1205

travel mm : 8.10...8.50

4th speed rpm : 1340

travel mm : 9.70...9.90

GUIDE SLEEVE POSITION Control-lever position

trol-lever position Degree: -1

Speed rpm: 1325

Rack travel in mm : 9.90...12.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed nom : 1000 Aneroid pressure h: 1000

: 184.0...186.0 Del.quantity

1000 : (181.0...189.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 115...123

Testing:

1st rack travel in: 11.20

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

rom : 1295...1325 Speed

4th rack travel in: 1450

Speed rpm : 0.00...1.40

LOW IDLE 1 Control lever

position degrees: 79...37

Testing:

Speed : 175 COM Minimum rack trave: 6.30 rpm : 275

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

rpm : 315...365 Speed

Anaroid/Altitude Compensator Test

1st version

Settina

Speed : 600 rpm Pressure hPa : 1000

: 12.20...12.30 Rack travel mm

Measurement

Speed 1/min: 600

1st pressure hPa : -

Rack travel in m: 9.30...9.50

2nd pressure hPa : 420

Rack travel in m: 11.60...11.70 3rd pressure hPa : 240

Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/: 120.0...122.0

1000 s: (117.0...125.0)

BREAKAWAY

1st version

1mm rack traval less than

full load rack tr: 11.20

rpm : 1190...1200 Speed

LOW IDLE

Speed : 275 rom

Rack travel in mm : 4.60...4.80

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

Test sheet

: DAF

Edition

: 05.10.92

Replaces

: 03.92

Test oil

: ISO-4113

Combination no.

: 0 402 646 970

Injection pump

EP type number

Pump designation : PE6P120A320RS7248Y

: 0 412 626 863

Governor

Governor design. : RQV275...1150PA985

Governer no.

: 0 421 813 920

Customer-spec. information Customer

: DAF

Engine

: RS 180 L

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 120...140

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar

: 207...210

: 0,8

Orifice plate

diameter mm

Test lines : 1 680 750 089

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 14.00...15.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 10.2...11.2

Difference * CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 14.5...14.7

100 s: (14.2...15.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 1.3...1.9

100 s: (1.0...2.2)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed mpin : 275

: 1.20...1.60 travel mm

2nd speed travel mm

rpm : 315

: 1.80...2.20 3rd speed rpm : 1205

travel mm

: 8.10...8.50

rpm : 1340 4th speed

: 9.70...9.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1340

Rack travel in mm : 8.40...11.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 1000

Aneroid pressure h: 1000

: 145.5...147.5 Del.quantity

1000 : (142.5...150.5)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 9.70

Speed rpm : 1180....1190

2nd rack travel in: 4.00

Speed rpm : 1265...1295 4th rack travel in: 1450

rpm : 0.00...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 79...87

Testing:

Speed rpn : 175 Minimum rack trave: 6.20 rpm : 275

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

rpm : 315...365 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 600 hPa : 1000 Pressure

Rack travel mm : 10.70...10.80

Measurement

Speed 1/min: 600

1st pressure hPa : -

Rack travel in m: 9.40...9.60

2nd pressure hPa : 260

Rack travel in m: 10.30...10.40 3rd pressure hPa : 190

Rack travel in m: 9.80...10.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed rpm : 600

F08

Del.quantity cm3/: 119.0...121.0

1000 s: (116.0...124.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70

rpm : 1180...1190 Speed

LOW IDLE

Speed rpm : 275

Rack travel in mm : 4.60...4.30

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 4.50...4.60 : (4.45...4.65) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-6-3-5-2-4 Test sheet : LIE : 25.09.92 Edition : 08.92 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 646 982 Toterance + - * : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PE6P120A320LS7848 EP type number : 0 412 626 866 1st speed rpm : 1050 Governor Governor design. : RQV300...1050PA1034 Rack travel in mm : 14.90...15.00 Governer no. : 0 421 813 993 Del.quantity cm3/: 25.9...26.1 Customer-spec, information Customer : LIEBHERR 100 s: (25.6...26.4) Engine : D 9306 TI Spread cm3 : 0.51st version kW : 270.0 100 s: (0.9) Rated speed : 2100 rpm : 350.0 2nd speed Rack travel in mm : 5.5...5.9 Del.quantity cm3/: 3.0...3.6 TEST BENCH REQUIREMENTS Test oil 100 s: (2.7...3.9) inlet temp. °C : 38...42 Spread cm3 : 0.6100 s: (1.0) Overflow valve : 1 417 413 025 (B) Setting of injection pump with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL Test nozzle holder ist speed rpm : 350 : 1 688 901 105 : 1.70...2.10 assembly travel mm 2nd speed rpm : 405 Openina . : 2.40...2.90 travel mm pressure, bar : 207...210 : 550 3rd speed rom travel mm : 4.20...4.60 Orifice plate 4th speed : 780 rpm diameter mm : 0,8 6.30...6.90 travel mm 5th speed : 1118 rpm : 10.40...10.60 travel mm : 1 680 750 075 Test Lines GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 x Length mm : 8.00x2.50x1000 rpm : 1185 Speed Rack travel in mm : 12.60...15.20 (A) Injection pump setting values Insp. values in parentheses FULL LOAD DELIV. AT FULL LOAD STOP Set equal delivery quant. per values 1st version rpm : 1050 Speed BEGINNING OF DELIVERY Aneroid pressure h: 1500 Del.quantity : 259.0...264.0)

Test pressure, bar: 25...27

cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 103...111 Testina: 1st rack travel in: 13.90 Speed rpm : 1100...1110 2nd rack travel in: 4.00 Speed rpm : 1200...1230 4th rack travel in: 1300 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 68...76 Testina: Speed : 250 COM Minimum rack trave: 8.90 Speed : 350 rpm Rack travel in mm : 5.60...5.80 CONSTANT REGULATION Speed nom : 350...420 Aneroid/Altitude Compensator Test 1st version Setting Speed rom : 700 Pressure hPa : 1500 Rack travel mm : 14.90...15.00 Measurement 1/min : 700 Speed 1st pressure hPa : -Rack travel in m: 11.70...11.90 2nd pressure hPa : 950 Rack travel in m: 14.60...14.70 3rd pressure hPa : 750 Rack travel in m: 13.00...13.20 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 194.0...196.0 1000 s: (191.0...199.0) cm3 : 8.00 Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.90 rpm : 1100...1110 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 150.0...170.0 1000 s: (146.0...174.0) LOW IDLE Speed rpm : 350 Rack travel in mm : 5.50...5.90 Del.quantity cm3/: 30.0...36.0 1000 s: (27.0...39.0)

cm3 : 6.00 1000 s: (10.00)

.

Remarks:

Spread

F10

Speed

1st version

Aneroid pressure h: -

rpm : 700

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : LIE Edition : 25.09.92 Replaces Test oil : ISO-4113 Combination no. : 0 402 646 982A Injection pump Pump designation : PE6P12DA32OLS7848 EP type number : 0 412 626 866 Governor Governor design. : RQV300...1050PA1034 : 0 421 813 993 Governer no. Cust. part no. : 9273581 Customer-spec. information Customer : LIEBHERR Engine : D 9306 TI 1st version: kW : 270.0 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 105 Opening. : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test lines : 1 680 750 075 Outside diameter x Wall thickness

x Lenath mm : 8.00x2.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____ BEGINNING OF DELIVERY F11

Test pressure, bar: 25...27 : 4.50...4.60 Prestroke mm : (4.45...4.65) Rack travel in mm : 9.00...12.00 Firing order : 1-6-3-5-2-4 Phasing : 0-60-120-180-240-300 Phasing Tolerance + - ° : 0.50 (0.75) BASIC SETTING rpm: 1050 1st speed Rack travel in mm : 14.90...15.00 Del.quantity cm3/: 25.9...26.1 100 s: (25.6...26.4) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 350.0 Rack travel in mm : 5.5...5.9 Del.quantity cm3/: 3.0...3.6 100 s: (2.7...3.9) Spread cm3 : 0.6100 s: (1.0) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 350 1.70...2.10 travel mm 2nd speed rpm : 405 travel ma : 2.40...2.90 rpm : 550 3rd speed : 4.20...4.60 travel mm 4th speed rpm : 780 : 6.30...6.90 travel mm rpm : 1118 5th speed : 10.40...10.60 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 1185 Rack travel in mm : 12.60...15.20 FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed

rpm : 1050

Aneroid pressure h: 1500

Del.quantity : 259.0...261.0

1000 : (256.0...264.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 103...111

Testing:

1st rack travel in: 13.90

rpm : 1100...1110 Speed

2nd rack travel in: 4.00

rpm : 1200...1230 Speed

4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 68...76

Testina:

Speed MC : 250 Minimum rack trave: 8.90 Speed : 350 man

Rack travel in mm : 5.60...5.80

Rack travel in mm: 2.00

Speed man. : 430...490

CONSTANT REGULATION

rpm : 350...420 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 700 mqn hPa : 1500 Pressure

Rack travel mm : 14.90...15.00

Measurement

1/min: 700 Speed

1st pressure hFa : -

Rack travel in m: 11.70...11.90

2nd pressure hPa : 950

Rack travel in m: 14.60...14.70

3rd pressure hPa : 750

Rack travel in m: 13.00...13.20

START CUT-OUT

1/min: 100 (80) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 700 Speed

Del.quantity cm3/: 194.0...196.0 1000 s: (191.0...199.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.90

Speed rpm : 1100...1110

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 150.0...170.0

1000 s: (146.0...174.0)

LOW IDLE

Speed rpm : 350 Rack travel in mm : 5.50...5.90 Del.quantity cm3/: 30.0...36.0

1000 s: (27.0...39.0)

Spread cm3 : 6.00

1000 s: (10.00)

Remarks:

F12

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 5.20...5.30 : (5.15...5.35) Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1 Note remarks Test sheet : MB : 05.10.92 Edition : 08.92 Replaces Test oil : ISO-4113 Phasina : 0-60-120-180-240-300 Combination no. : 0 402 646 993 Tolerance + - * : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation : PE6P12OA320LS7852 EP type number : 0 412 626 871 BASIC SETTING Covernor Governor design. : RQ300/1050PA1030-3 1st speed rpm: 600 Governer no. : 0 421 801 653 Rack travel in mm : 14.00...14.10 Customer-spec. information Customer : MERCEDES-BENZ Del.quantity cm3/: 23.4...23.6 Engine : 0M441 LA 100 s: (23.1...23.9) 1st version kW : 250.0 Spread cm3 : 0.5Rated speed : 2100 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.0 2nd speed Test oil Rack travel in mm: 5.6...6.2 inlet temp. °C : 38...42 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) Overflow valve Spread cm3 : 0.6: 1 417 413 025 100 s: (1.0) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-Lever position Test nozzle holder Degree: -2 : 1 688 901 105 assembly Speed rpm : 600 Rack travel in mm: 19.20...20.80 Opening pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0.8 Speed rpm : 600 Aneroid pressure h: 1100 Del.quantity : 234.0...236.0 1000 : (231.0...239.0) Test lines : 1 680 750 075 : 5.00 Spread cm3 Outside diameter 1000 : (9.00) x Wall thickness : 8.00X2.50X1000 x Length mm RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses

Set equal delivery quant. per values ___

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Setting point:

rom Rack travel in mm: 20.0

Speed

Testing:

: 1095...1110 Speed COM 2nd rack travel in: 4.00 mom : 1180...1210 Speed 4th rack travel in: 1300 Speed rom : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring mpm : 300 Rack travel in mm: 5.9 Testing: Speed rpm : 200 Minimum rack trave: 8.30 Speed rpm : 300 Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 rpm : 370...410 Speed TORQUE CONTROL Dimension a mm 2nd speed rpm : 1050 Rack travel in m: 13.80...14.00 3rd speed rpm : 800 Rack travel in m: 14.40...14.60 Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 Speed Pressure hPa : -Rack travel mm : 10.00...10.30 Measurement 1/min: 500 Speed 1st pressure hPa : 300 Rack travel in m: 10.70...10.80 2nd pressure hPa : 700 Rack travel in m: 12.80...13.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 Speed rpm : 1050 Del.quantity cm3/: 223.0...227.0 1000 s: (220.0...230.0) Spread cm3 : 8.001000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.90 Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Rack travel in mm : 10.00...10.40

Remarks:

F14

Spread

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 130.0...132.0

> cm3 : 8.00 1000 s: (12.0)

1000 s: (127.0...135.0)

Note remarks

Test sheet

: MB

Edition

: 05.10.92

Replaces

: 05.92

Test oil

: ISO-4113

Combination no.

: 0 402 646 994

Injection pump

Pump designation : PE6P120A320LS7852

EP type number

: 0 412 626 871

Governor

Governor design: : RQ300/950PA1032-3

Governer no.

: 0 421 801 654

Customer

Customer-spec. information

: MERCEDES-BENZ

Engine

: OM441 1 A

1st version kw

: 250.0

Rated speed

: 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 105

Openina.

pressure, bar

: 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order

: 6-3-5-2-4-1

Phasing

: 0-60-120-180-240-300

Tolerance + - *

: 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed

rpm: 600

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 23.4...23.6

100 s: (23.1...23.9)

cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.6...6.2 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread

Spread

cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

rpm : 600

Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Spread

rpm : 600

Aneroid pressure h: 1100

Del.quantity

: 234.0...236.0 1000 : (231.0...239.0)

: 5.00

cm3

1000 : (9.00)

RATED SPEED

1st version

Testing:

Setting point: Speed

rpm : 600

Rack travel in mm : 20.0

1st rack travel in: 13.00

rpm : 990...1005 Speed 2nd rack travel in: 4.00 : 1065...1095 Speed man 4th rack travel in: 1200 Speed mom : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 5.9 Testing: Speed : 200 rpm Minimum rack trave: 8.30 : 300 rom Rack travel in mm : 5.80...6.00 Rack travel in mm: 2.00 Speed : 370...410 MON Ameroid/Altitude Compensator Test 1st version Setting : 500 Speed PDII: Pressure hPa : -: 10.10...10.40 Rack travel mm Measurement 1/mirs : 500 Snead 1st pressure hPa : 300 Rack travel in m: 10.80...10.90 2nd pressure hPa : 700 Rack travel in m: 12,90. ..13.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 Speed rpm : 950 Del.quantity cm3/: 228.0...232.0 1000 s: (225.0...235.0) Spread cm3 : 8.001000 s: (12.0)

Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) cm3 : 8.00Spread 1000 s: (12.0) **BREAKAWAY**

full load rack tr: 13.00 Speed rpm : 990...1005 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 50.0...80.0 1000 s: (46.9...84.0) Rack travel in mm : 10.10...10.50 Remarks:

1st version

1mm rack travel less than

Note remarks

Test sheet

Edition

: 05.10.92

Replaces

: 08.92

Test oil

: ISO-4113

Combination no.

: 0 402 646 996

Injection pump

Pump designation : PE6P120A320LS7852

EP type number

: 0 412 626 871

Governor

Governor design. : RQ300/1050PA1031-4

: 0 421 801 656 Governer no.

Customer-spec. information

Customer

: MERCEDES-BENZ

Engine

: 0M441 LA

1st version kW

: 250.0

Rated speed

: 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly

: 1 688 901 105

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test lines

: 1 680 750 075

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing

: 0-60-120-180-240-300

Tolerance + - *

: 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed

nom: 600

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 23.4...23.6

100 s: (23.1...23.9)

Spread

cm3 : 0.5

100 s: (0.9)

2nd speed

rom : 300.0

Rack travel in mm : 5.6...6.2 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread

cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

rpm : 600

Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed

rpm : 600

Aneroid pressure h: 1100

Del.quantity

: 234.0...236.0

1000 : (231.0...239.0)

Spread cm3

: 5.00

1000 : (9.00)

RATED SPEED

1st version

Speed

Setting point:

rpm

: 600

Rack travel in mm: 20.0

F17

Testing:

1st rack travel in: 12.80

rpm : 1090...1105 Speed

2nd rack travel in: 4.00

rpm : 1180...1210 Speed

4th rack travel in: 1300

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 5.9

Testina:

rpm : 200 Speed Minimum rack trave: 8.10 rpm : 300 Speed

Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00

Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.20

2nd speed rpm : 1050

Rack travel in m: 13.80...14.00

3rd speed rpm : 800

Rack travel in m: 14.50...14.70

Ameroid/Altitude Compensator Test

1st version

Setting

Speed : 500 תמח Pressure hPa : -

: 10.00...10.30 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : 300

Rack travel in m: 10.70...10.80

2nd pressure hPa : 700

Rack travel in m: 12.80...13.00 3rd pressure hPa : 1600 Rack travel in m: 14.00...14.10

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100 Speed rpm : 1050 Del.quantity cm3/: 223.0...227.0

1000 s: (220.0...230.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 130.0...132.0
1000 s: (127.0...135.0)

cm3 : 8.00 Spread

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

rpm : 1090...1105 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 255.0...275.0 1000 s: (251.0...279.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 5.20...5.30 : (5.15...5.35) Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1 Note remarks Test sheet : 05.10.92 Edition : 08.92 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 646 997 Tolerance + - * : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation : PE6P12DA32DLS7852 EP type number : 0 412 626 871 BASIC SETTING Governor Governor design. : RQV300...950PA1033-5 1st speed rpm: 600 : 0 421 814 008 Governer no. Rack travel in mm : 14.00...14.10 Customer-spec. information Customer : MERCEDES-BENZ Del.quantity cm3/: 23.4...23.6 : 0M441 LA Engine 100 s: (23.1...23.9) 1st version kW : 250.0 Spread cm3 : 0.5Rated speed : 1900 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.0 2nd speed Test oil Rack travel in mm: 5.6...6.2 inlet temp. °C : 38...42 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) Overflow valve Spread cm3 : 0.6: 1 417 413 025 100 s: (1.0) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 105 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 300 Openina : 1.00...1.50 travel mm : 207...210 pressure, bar rpm : 575 2nd speed 4.20...4.70 travel mm Orifice plate : 790 3rd speed rpm diameter mm : 0,8 5.90...6.40 travel mm rpm : 1010 4th speed : 8.00...8.50 travel mm Test lines : 1 680 750 075 5th speed rpm : 1200 travel mm : 11.00...12.00 Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 8.00x2.50x1000 x Length mm Control-lever position Degree: -1 (A) Injection pump setting values rpm : 1075 Speed Insp. values in parentheses Set equal delivery quant.

Rack travel in mm : 11.70...14.30 per values ____ FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version Test pressure, bar: 25...27 Speed rpm : 600 Aneroid pressure h: 1100

Del.quantity : 234.0...236.0 1000 : (231.0...239.0) Spread cm3 : 5.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 116...124 Testina: 1st rack travel in: 13.00 rom : 990...1000 Speed 2nd rack travel in: 4.00 rom : 1070...1100 Speed 4th rack travel in: 1200 Speed rpm : 0.00...1.40LOW IDLE 1 Control lever position degrees: 80...88 Testing: Speed : 200 r'pm Minimum rack trave: 8.10 : 300 Speed rpm Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 Speed : 410...470 CDM CONSTANT REGULATION Speed : 290...360 mom Aneroid/Altitude Compensator Test 1st version Settina Speed : 500 חכרו Pressure hPa Rack travel mm : 10.10...10.40 Measurement 1/min : 500 Speed 1st pressure hPa : 300

Rack travel in m: 10.80...10.90 2nd pressure hPa : 700 Rack travel in m: 12.90...13.10 3rd pressure hPa : 1100 Rack travel in m: 14.00...14.10 START CUT-OUT 1/min: 240 (260) Speed FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1100 1000 s: (225.0...235.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) Spread cm3 : 8.00 1000 s: (12.0)

1st version 1mm rack travel less than

BREAKAWAY

full load rack tr: 13.00 rpm : 990...1000 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm Del.quantity cm3/: 255.0...275.0 1000 s: (251.0...279.0)

Remarks:

Note remarks

Test sheet

Edition

: 05,10,92

Replaces

: 08.92

Test oil

: ISO-4113

Combination no.

: 0 402 646 998

Injection pump

Pump designation : PE6P120A320LS7852

EP type number

: 0 412 626 871

Governor

Governor design.

: RQV300...1050PA1033

Governer no.

: 0 421 814 009

Customer-spec. information

Customer

: MERCEDES-BENZ

Engine

: 0M441 LA

1st version kW

: 250.0

Rated speed

: 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly

: 1 688 901 105

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test lines

: 1 680 750 075

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x1000

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order

: 6-3-5-2-4-1

Phasing

: 0-60-120-180-240-300

Tolerance + - *

: 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed

rpm: 600

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 23.4...23.6

100 s: (23.1...23.9)

Spread

Spread

cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 5.6...6.2

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 300

travel mm

0.50...1.00 : 575

2nd speed travel mm

rpm : 4.30...4.80

3rd speed rpm : 625

travel mm

: 4.80...5.30

4th speed

rpm : 830

travel mm 5th speed

: 5.90...6.40 rpm : 1190

travel mm

Speed

: 9.80...10.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1170

Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600Aneroid pressure h: 1100 **: 234.0...**236.0 Del.quantity 1000 : (231.0...239.0) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 116...124 Testing: 1st rack travel in: 12.90 rpm : 1090...1105 Speed 2nd rack travel in: 4.00 rpm : 1165...1195 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.50 LOW IDLE 1 Control lever position degrees: 78...86 Testing: Speed nom : 200 Minimum rack trave: 8.70 ; 300 mqn: Rack travel in mm : 5.80...6.00 CONSTANT REGULATION rpm : 300...400 Speed TORQUE CONTROL Dimension a mm : 0.20 2nd speed : 1050 man Rack travel in m: 13.80...14.00 rpm : 300 3rd speed Rack travel in m: 14.00...14.20 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed CDM Pressure hPa : -Rack travel mm : 10.00...10.30 Measurement 1/min : 500 Speed

3rd pressure hPa : 1100 Rack travel in m: 14.00...14.10 START CUT-OUT 1/min: 240 (260) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 Speed : 1050 rpm Del.quantity cn3/: 223.0...227.0 1000 s: (220.0...230.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 130.0...132.0 1000 s: (127.0...135.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.90 rpm : 1090...1105 Speed Remarks:

1st pressure hPa : 300

2nd pressure hPa : 700

Rack travel in m: 10.70...10.80

Rack travel in m: 12.80...13.00

Note remarks

Test sheet : MB 14,7 z
Edition : 21.09.92
Replaces : 04.92
Test oil : 180-4113

Combination no. : 0 402 648 923

Injection pump

Pump designation : PE8P120A320LS7840-1

EP type number : 0 412 628 862

Governor

Governor design. : RQV350...1050PA866

-16

Governer no. : 0 421 813 961

Customer spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 A

1st version kW : 250.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzie holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)
Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - \cdot : 0.50 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.40...13.60

Del.quantity cm3/: 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.8...6.4 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.30...1.80 2nd speed rpm : 454

travel mm : 2.80...3.30

3rd speed rpm : 900

travel mm : 5.40...5.90

4th speed rpm : 1107

travel mm : 7.80...8.30

5th speed rpm: 1204

travel mm : 9.80...10.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP 1st pressure hPa : 300 Rack travel in m: 11.10...11.30 2nd pressure hPa : 550 Rack travel in m: 12.40...12.60 1st version rpm : 600 Speed Aneroid pressure h: 800 3rd pressure hPa : 1100 : 212.0...214.0 Del.quantity Rack travel in m: 13.50...13.60 * 1000 : (209.0...217.0) 4th pressure hPa : 1200 Spread Rack travel in m. 13.80. .14.00 cm3: 6.00 1000 : (9.00) 5th pressure hPa : -Rack travel in m: 10.60...10.90 RATED SPEED START CUT-OUT 1st version Control lever Speed 1/min : 270 (290): position degrees: 118...126 FUEL DELIVERY CHARACTERISTICS Testing: 1st rack travel in: 11.80 rom : 1090...1100 1st version 2nd rack travel in: 4.00 Aneroid pressure h: 1400 rpm : 1160...1190 Speed Speed : 1050 rpm 4th rack travel in: 1200 Del.quantity cm3/: 195.0...198.0 1000 s: (192.0...201.0) rpm : 0.00...1.00 Speed cm3 : 8.00 Spread LOW IDLE 1 1000 s: (12.0) Control lever Aneroid pressure h: 1400 position degrees: 66...74 : 800 Speed rpm Del.quantity cm3/: 236.0...240.0 1000 s: (233.0...243.0) Testing: Speed cn:3 : 8.00 וחכיו Spread 1000 s: (12.0) Minimum rack trave: 7.60 rom : 350 Speed Aneroid pressure h: -Rack travel in mm : 6.00...6.20 : 500 Speed rpm Del.quantity cm3/: 132.0...134.0 CONSTANT REGULATION 1000 s: (129.0,...137.0) rom : 350...500 Speed Spread cm3 : 8.00 1000 s: (12.0) TORQUE CONTROL Dimension a mm : 0.70 Torque control curve - 1st version BREAKAWAY 1st speed rom : 1050 Rack travel in m: 12.80...13.00 1st version 900 2nd speed rpm 1mm rack travel less than Rack travel in m: 13.50...13.60 800 3rd speed rom full load rack tr: 11.80 Rack travel in m: 14.10...14.30 Speed rpm : 1090...1100 Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test : 100 Speed rpm 1st version Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0) Setting : 600 Speed (DI) Pressure hPa : 800 Remarks: : 13.40...13.60 Rack travel mm Measurement * Increase in control-rod travel with 1/min: 600 Speed respect to setting at least 0.1 mm

Note remarks

Test sheet : MB 14,7 e 1 : 21.09.92 Edition : 11.91 Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 924

Injection pump

Pump designation: PE8P120A320LS7840-1

EP type number : 0 412 628 862

Governor

Governor design. : RGV350...950PA866-17

: 0 421 813 962 Governer no.

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M442 A

: 250.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 : 8- 7- 2- 6- 3- 5-Firing order

Phasina : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.40...13.60

Del.quantity cm3/: 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.6

100 s: (6.9)

rpm : 350.0 2nd speed

Rack travel in mm: 5.8...6.4 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.30...1.80 travel mm

rpm : 424 2nd speed

: 2.3C...2.80 rpm : 700 travel mm 3rd speed

: 4.10...4.60 travel mm

rpm : 1008 4th speed

travel mm : 7.80...8.30

rpm : 1220 5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600 Aneroid pressure h: 800 : 212.0...214.0 Del.quantity 1000 : (209.0...217.0) : 6.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 118...126 Testina: 1st rack travel in: 11.80 : 990...1000 MOM 2nd rack travel in: 4.00 : 1070...1100 Speed mom 4th rack travel in: 1200 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 82...90 Testing: Speed rpm Minimum rack trave: 7.10 : 350 Speed rpm Rack travel in mm : 6.00...6.20 CONSTANT REGULATION Speed rpm : 350...550 TORQUE CONTROL Dimension a mm : 1.30 Torque control curve - 1st version rpm : 950 1st speed Rack travel in m: 12.80...13.00 rpm : 850 2nd speed Rack travel in m: 13.80...13.90 : 800 3rd speed rpm Rack travel in m: 14.10...14.30 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed **From** hPa : 800 Pressure : 13.40...13.60 Rack travel mm Measurement 1/min: 600 Speed

Rack travel in m: 11.10...11.30 2nd pressure hPa : 550 Rack travel in m: 12.40...12.60 3rd pressure hPa : 1100 Rack travel in m: 13.50...13.60 * 4th pressure hPa : 1200 Rack travel in m: 13.80...14.00 5th pressure hPa : Rack travel in m: 10.60...10.90 START CUT-OUT 1/min: 270 (290) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 : 950 Speed rpm Del.quantity cm3/: 195.0...198.0 1000 s: (192.0...201.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1400 beed : 800 rpm Del.quantity cm3/: 236.0...240.0 1000 s: (233.0...243.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) cm3 : 8.00 Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.80 rpm : 990...1000 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0) Remarks:

* Increase in control-rod travel with

respect to setting at least 0.1 mm

1st pressure hPa : 300

Note remarks

Test sheet

Edition : 21.09.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 937

Injection pump

Pump designation : PE8P120A320LS7840-10

EP type number : 0 412 628 856

Governor

Governor design. : RQV300...1050PA1033

Governer no. : C 421 814 001

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35) Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

Phasing : 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.30...13.40

Del.quantity cm3/: 20.9...21.1

100 s: (20.6...21.4)

cm3 : 0.6Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm: 6.2...6.8 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm 0.60...1.00

2nd speed

rpm : 575 : 4.20...4.80 travel mm

3rd speed rpm : 830

travel mm : 5.80...6.40

4th speed rpm : 1107

travel mm : 8.30...8.50

: 1290 5th speed rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1190

Rack travel in mm : 10,40...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1200 Del.quantity : 209.0...211.0 1000 : (206.0...214.0) cm3 : 6.00 1000 : (9.00) Spread RATED SPEED 1st version Control Lever position degrees: 116...124 Testina: 1st rack travel in: 11.80 Speed rpm : 1090...1100 2nd rack travel in: 4.00 rpm : 1145...1175 Speed 4th rack travel in: 1300 Speed ron : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 79...87 Testing: Speed mon : 200 Minimum rack trave: 9.40 rpm : 300 Rack travel in mm : 6.40...6.60 CONSTANT REGULATION rpm : 300...450 Speed TORQUE CONTROL Dimension a mm : 0.60 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 12.70...12.90 rpm : 900 2nd speed Rack travel in m: 13.00...13.10 3rd speed rpm : 700 Rack travel in m: 13.30...13.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 COM Pressure hPa : -: 11.00...11.30 Rack travel mm Measurement 1/min: 500 Speed

Rack travel in m: 12.60...12.80 3rd pressure hPa : 1200 Rack travel in m: 13.30...13.40 START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm : 1050 Del.quantity cm3/: 192.0...196.0 1000 s: (189.0...199.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 136.0...138.0 1000 s: (133.0...141.0) Spread cm3 : 8.001000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.80 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0)

Remarks:

1st pressure hPa : 350 Rack travel in m: 11.30...11.40

2nd pressure hPa : 700

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Note remarks Firing order Test sheet : MB Edition : 05.10.92 Replaces Test oil : ISO-4113 Phasing Combination no. : 0 402 648 938 Tolerance + - ° Injection pump Pump designation : PE8P120A320LS7840-10 EP type number : 0 412 628 856 Governor BASIC SETTING Governor design. : RQ300/1050PA1030-2 Governer no. : 0 421 801 652 1st speed Customer-spec. information Customer : MERCEDES-BENZ : 0M442 A Engine 1st version kW : 250.0 Rated speed : 2100 Spread TEST BENCH REQUIREMENTS Test oil 2nd speed inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Spread Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 105 assembly Speed Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,8 1st version Speed Test lines : 1 680 750 075 Del.quantity Outside diameter Spread x Wall thickness x Length mm : 8.00x2.50x1000 RATED SPEED (A) Injection pump setting values

: 5.20...5.30 : (5.15...5.35) Rack travel in mm : 20.00...21.00 : 8-7-2-6-3-5-: 0-45-90-135-180-225-270-315 : 0.50 (0.75) Time to cyl. no. : 8 rpm: 700 Rack travel in mm : 13.30...13.40 Del.quantity cm3/: 20.9...21.1 100 s: (20.6...21.4) cm3 : 0.6 100 s: (0.9) rpm : 300.0 Rack travel in mm : 6.2...6.8 Del.quantity cm3/: 1.0...1.6 100 s: (0.7...1.9) cm3 : 0.8 100 s: (1.2) GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 600 Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP rpm : 700 Aneroid pressure h: 1200 : 209.0...211.0 1000 : (206.0...214.0) cm3 : 6.001000 : (9.00) 1st version Setting point: Speed rpm : 600 Rack travel in mm : 20.0

Testing:

Insp. values in parentheses

Set equal delivery quant.

per values ____

Test pressure, bar: 25...27

BEGINNING OF DELIVERY

1st rack travel in: 11.70 rpm : 1090...1105 Speed 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.00 LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.5 Testing: Speed rpm : 200 Minimum rack trave: 8.80 rpm : 300 Rack travel in mm : 6.40...6.60 Rack travel in mm: 2.00 rpm : 380...420 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 12.70...12.90 2nd speed rpm : 700 Rack travel in m: 13.30...13.50 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 Pressure hPa : -Rack travel mm : 11.00...11.30 Measurement Speed 1/min: 500 1st pressure hPa : 350 Rack travel in m: 11.30...11.40 2nd pressure hPa : 700 Rack travel in m: 12.60...12.80 3rd pressure hPa : 1200 Rack travel in m: 13.30...13.40 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 1050 Del.quantity cm3/ : 192.0...196.0 1000 s: (189.0...199.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500

Del.quantity cm3/: 136.0...138.0 1000 s: (133.0...141.0) Spread cm3 : 8.00 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.70 Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 50.0...70.0 1000 s: (46.0...74.0)

Remarks:

G03

Note remarks

Test sheet

Edition : 21.09.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 945

Injection pump

Pump designation: PE8P120A320LS7847

EP type number : 0 412 628 863

Governor

Governor design. : RQ300/1050PA1030-6

Governer no. : 0 421 801 666

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

1st version kW : 280.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 : 8- 7- 2- 6- 3- 5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 21.1...21.3

100 s: (20.8...21.6)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 5.9...6.5

Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 1200

: 211.0...213.0 Del.quantity

1000 : (208.0...216.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm

Rack travel in mm: 20.0 Testina: 1st rack travel in: 13.00 Speed rpm : 1090...1105 2nd rack travel in: 4.00 Speed rpm : 1170...1200 4th rack travel in: 1300 rom : 0.00...1.47Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm : 6.2 Testina: Speed : 200 rpm Minimum rack trave: 8.30 Speed : 300 rpm Rack travel in mm : 6.10...6.30 Rack travel in mm : 2.00 Speed : 370...410 mon. TORQUE CONTROL Dimension a mm : 0.30 Torque control curve - 1st version rpm : 1050 1st speed Rack travel in m: 13.90...14.00 npm : 550 2nd speed Rack travel in m: 14.80...15.00 Aneroid/Altitude Compensator Test 1st, version Setting Speed rom : 500 Pressure hPa : -Rack travel mm : 10.10...10.40 Measurement $1/\min : 500$ Speed 1st pressure hPa : 350 Rack travel in m: 10.70...10.80 2nd pressure hPa : 700 Rack travel in m: 12.20...12.40 3rd pressure hPa : 1200 Rack travel in m: 14.20...14.40

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 1200

rom

Del.quantity cm3/: 224.0...228.0

: 550

1000 s: (221.0...231.0)

Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) Spread cm3 : 8.001000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.00 Speed rpm : 1090...1105 Remarks: *

Speed

1st version

Note remarks

Test sheet

Edition : 21.09.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 946

Injection pump

Pump designation : PE8P120A320LS7847

EP type number : D 412 628 863

Governor

Governor design. : RQ300/1050PA1031-7

: 0 421 801 667 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

1st version kW : 280.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 : (5.45...5.65) Prestroke mm

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 21.1...21.3

100 s: (20.8...21.6)

cm3 : 0.6Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.9...6.5

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.6)

GUIDE SLEEVE POSITION

Control-lever position Degres: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 1200

: 211.0...213.0 Del.quantity

1000 : (208.0...216.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 וחסיו

Rack travel in mm : 20.0 Testing: 1st rack travel in: 12.90 rpm : 1090...1105 Speed 2nd rack travel in: 4.00 rpm : 1175...1205 Speed 4th rack travel in: 1300 rpm : 0.00...1.40 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.2 Testina: rpm Speed : 200 Minimum rack trave: 8.40 : 300 Speed rpm . Rack travel in mm : 6.10...6.30 Rack travel in mm : 2.00 Speed : 380...420 rom TORQUE CONTROL Dimension a mm : 0.30 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 13.90...14.10 2nd speed rpm : 550 Rack travel in m: 14.90...15.10 Aneroid/Altitude Compensator Test 1st version Settina Speed : 500 man Pressure hPa : -Rack travel mm : 10.10...10.40 Measurement Speed $1/\min : 500$ 1st pressure hPa : 350 Rack travel in m: 10.70...10.80 2nd pressure hPa : 700 Rack travel in m: 12.20...12.40 3rd pressure hPa : 1200 Rack travel in m: 14.20...14.40 START CUT-OUT

Speed mqn Del.quantity cm3/: 224.0...228.0 1000 s: (221.0...231.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) Spread cm3 : 8.001000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.90 Speed rpm : 1090...1105 Remarks: 3 APPLICATION **Omnibus**

Speed

1st version Aneroid pressure h: 1200

1/min : 220 (240)

Note remarks

Test sheet : MB

Edition : 21.09.92

Replaces :-

Test oil : ISO-4113

Combination no. : 0 402 648 947

Injection pump

Pump designation : PE8P120A320LS7859 EP type number : 0 412 628 869

Governor

Governor design. : RQ300/950PA1032-5

Governer no. : 0 421 801 668

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 320.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 950

Rack travel in mm : 14.10...14.20

Del.quantity cm3/: 23.1...23.3

100 s: (22.8...23.6)

Spread cm3:0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3:0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm: 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 950 Aneroid pressure h: 1000

Del.quantity : 231.0...233.0

1000 : (228.0...236.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm: 600

Rack travel in mm : 20.0 Testing: 1st rack travel in: 13.10 Speed rpm : 990...1005 2nd rack travel in: 4.00 rpm : 1065...1095 Speed 4th rack travel in: 1200 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm : 6.5 Testing: Speed rpm : 200 Minimum rack trave: 8.80 rpm : 300 Speed Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 Speed : 380...420 rpm Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : -Rack travel mm : 10.70...10.80 Measurement 1/min: 500 Speed 1st pressure hPa : 250 Rack travel in m: 11.00...11.10 2nd pressure hPa : 600 Rack travel in m: 13.00...13.20 3rd pressure hPa : 1000 Rack travel in m: 14.10...14.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm : 550 Del.quantity cm3/: 243.0...247.0 1000 s: (240.0...250.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 142.0...144.0 1000 s: (139.0...147.0) Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.10

Speed rpm : 990...1005

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 25...27 Note remarks Prestroke mm : 5.20...5.30 : (5.15...5.35) Test sheet Edition : 21.09.92 Rack travel in mm : 20.00...21.00 Replaces Firing order : 8-7-2-6-3-5-Test oil : ISO-4113 Combination no. : 0 402 648 948 Injection pump Phasina : 0-45-90-135-180-225-270-315 Pump designation : PE8P120A320LS7859 EP type number : 0 412 628 869 Tolerance + - * : 0.50 (0.75)Governor Governor design. : RQ300/1050PA1030-7 Time to cyl. no. : 8 Governer no. : 0 421 801 669 BASIC SETTING Customer-spec. information Customer : MERCEDES-BENZ 1st speed rpm : 1050 Engine : 0M442 LA Rack travel in mm : 13.70...13.80 : 320.0 : 2100 1st version kW Del.quantity cm3/: 22.3...22.5 Rated speed 100 s: (22.0...22.8) TEST BENCH REQUIREMENTS Spread cm3 : 0.6Test oil inlet temp. °C : 38...42 100 s: (0.9) rpm : 300.0 Overflow valve 2nd speed : 1 417 413 025 Rack travel in mm: 6.2...6.8 Del.quantity cm3/: 1.6...2.2 Inlet press., bar: 1.50 100 s: (1.3...2.5) Spread cm3 : 0.6Overflow 100 s: (1.0) quantity min. 1/h: 100...120 GUIDE SLEEVE POSITION Test nozzle holder Control-lever position : 1 688 901 105 assembly Degree: -2 Speed rpm : 600 Rack travel in mm : 19.20...20.80 Opening | : 207...210 pressure, bar FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate diameter mm : 0,8 1st version Speed rpm : 1050 Aneroid pressure h: 1000 Test lines : 1 680 750 075 : 223.0...225.0 Del.quantity 1000 : (220.0...228.0) Outside diameter Spread cm3 : 6.00 x Wall thickness 1000 : (9.00) : 8.00x2.50x1000 x Length mm RATED SPEED (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. 1st version per values ___

Setting point:

: 600

rpm

Speed

Rack travel in mm : 20.0 Testing: 1st rack travel in: 13.00 rpm : 1090...1105 Speed 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1300 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm : 6.5 Testing: : 200 Speed rpm Minimum rack trave: 8.80 rpm : 300 Speed Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 Speed : 380...420 rom TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 13.70...13.80 d speed rpm : 500 2nd speed rpm Rack travel in m: 14.60...14.80 Aneroid/Altitude Compensator Test 1st version Settina Speed : 500 man hPa : Pressure Rack travel mm : 10.70...11.00 Measurement Speed 1/min : 500 1st pressure hPa : 250 Rack travel in m: 11.00...11.10 2nd pressure hPa : 600 Rack travel in m: 13.00...13.20 3rd pressure hPa : 1000 Rack travel in m: 14.10...14.30 FUEL DELIVERY CHARACTERISTICS 1st version

Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 139.0...141.0 1000 s: (136.0...143.0) Spread cm3 : 8.001000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than full load rack tr: 13.00 Speed rpm : 1090...1105

Remarks: •

Speed

Aneroid pressure h: 1000

rpm : 550 Del.quantity cm3/: 243.0...247.0 1000 s: (240.0...250.0)

Note remarks

Test sheet : MMM 21,6 c : 21.09.92 Edition Replaces : 11.90

Test oil : ISO-4113

Combination no. : 0 402 670 808

Injection pump

Pump designation: PE12P120A520/5RS7212

EP type number : 0 412 620 823

Governor

Governor design. : RSUV325...1150P0A359

: 0 421 829 108 Governer no.

Customer-spac. information Customer : MWM

Engine : TBD234V12

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.60...4.70 : (4.55...4.75)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 9- 10- 5- 6-

11- 12- 3- 4- 7- 8

Phasing : 0-30-60-90-120-150-

180-210-240-270-300-

330

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 26.0...26.2

100 s: (25.8...26.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0 Rack travel in mm: 6.9...7.1

Del.quantity cm3/: 3.0...4.0 100 s: (2.7...4.3)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 COS: mun

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

RATED SPEED

1st version Control lever

position degrees: 106...114

Testing:

1st rack travel in: 12.40

rom : 1190...1200 Speed

2nd rack travel in: 4.00

rpm : 1260...1290 Speed

4th rack travel in: 1440

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 71...79

Setting point w/out bumper spring

rpm : 325 Rack travel in mm: 6.5

Testina:

Speed CDM : 100 Minimum rack trave: 19.50

Speed : 325 rpm

Rack travel in mm : 6.90...7.10 Rack travel in mm : 2.00

Speed (i)Cr1 : 440...500

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 Pressure hPa : 1250

Rack travel mm : 13.40...13.50

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 9.30...9.50

2nd pressure hPa : 625

Rack travel in m: 12.00...12.10

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.40

Scieca rom : 190...1200

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 330.0...370.0

1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 325

Rack travel in mm : 9.20...9.40 Del.quantity cm3/: 85.0...105.0 1000 s: (-)

LOW IDLE

Speed rpm : 325 Rack travel in mm : 7.90...8.10

Del.quantity cm3/: 0 * 1000 s: (-)

Remarks:

* = Element disconnected at idle for cylinders 2, 4, 6, 8, 10 and 12.

Hydraulic latching of starting delivery.

Latching at 0.75 bar...0.85 bar.

Unlatching at 0.35 bar...0.45 bar.

Full-load delivery not known. Set according to engine test report.

Test specifications upon request.

Note remarks

Test sheet : MB 9,6 t : 21.09.92 Edition : 12.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 676 811

Injection pump

Pump designation: PE6P120A320LS7834-1

EP type number : 0 412 626 857

Governor

Governor design. : RSV675...1050P0A826

: 0 421 833 366 Governer no.

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M 401 LA

1st version kW : 205.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60 : (5.45...5.65)

Rack travel in mm : 19.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 14.10...14.20

Del.quantity cm3/: 22.1...22.3

100 s: (21.8...22.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 675.0

Rack travel in mm: 4.2...4.6 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Del.quantity : 221.0...223.0

1000 : (218.0...225.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever position degrees: 85...93 Testing: 1st rack travel in: 13.10 Speed rpm : 1070...1080 2nd rack travel in: 4.00 rom : 1200....118 Speed 4th rack travel in: 1300 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 78...78 Setting point w/out bumper spring rpm : 675 Rack travel in mm: 4.3 Testing: Speed rom : 100 Minimum rack trave: 19.50 Speed rpm : 675 Rack travel in mm : 4.00...4.60 Rack travel in mm: 2.00 Speed rpm : 680...720 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 700 Del.quantity cm3/: 214.0...218.0 1000 s: (211.0...221.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.10 rpm : 1070...1080 Speed STARTING FUEL DELIVERY

rpm : 100 Del.quantity cm3/: 240.0...260.0

rpm -Rack travel in mm: 4.20...4.60

1000 s: (236.0...264.0)

Del.quantity cm3/: 16.0...22.0 1000 s: (13.0...25.0) Spread cm3 : 6.001000 s: (10.00)

Remarks:

:

Speed

LOW IDLE

Note remarks

Test sheet : CUM 5,9 w 2 Edition : 21.09.92 Replaces : 05.92 Test oil : ISO-4113

Combination no. : 0 402 736 811

Injection pump

Pump designation : PES6P110A12DRS7213 EP type number : 0 412 716 804

Governor

: RQV400...1250PA964 Governor design.

-3K

Governer no. : 0 421 815 255

Customer-spec. information Customer : C.D.C.

Engine : 6BTA-A

1st version kW : 147.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 115...125

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45

: (4.30...4.50) Pack travel in mm : 9.00.. 12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 14.80...14.90

Del.quantity cm3/ : 15.8...16.0

100 s: (15.5...16.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7 Del.cuantity cm3/ : 3.2...3.8 100 s: (3.0...4.0)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 400 1st speed

: 1.60...1.80 travel mm

2nd spead rpm : 600

: 2.80...3.30 travel mm

3rd speed : 1300 rpm

travel mm : 7.20...7.40

: 1500 4th speed rom

: 8.90...9.30 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250 Aneroid pressure h: 1200

: 158.5...160.5 Del.quantity 1000 : (155.5...163.5)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control Lever

position dégrees: 56...64

Testing:

1st rack travel in: 13.80

rpm : 1290...1300 Speed

2nd rack travel in: 4.00

rpm : 1460...1490 Speed

4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 12...20

Testing:

Speed : 275 rpm

Minimum rack trave: 7.20 : 400 Speed nom

Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 14.80...14.90

2nd speed npm: 800

Rack travel in m: 13.20...13.40

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 1250 **CDW** hPa : 1200 Pressure

: 14.80...14.90 Rack travel mm

Measurement

Speed 1/min: 1250

1st pressure hPa : -

Rack travel in m: 8.20...8.60

2nd pressure hPa : 410

Rack travel in m: 10.60...10.70

3rd pressure hPa : 755

Rack travel in m: 13.70...14.10

START CUT-OUT

Speed 1/min: 290 (300) FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 800 bel.quantity cm3/ : 156.5...162.5 1000 s: (153.5...165.5)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: -Speed rpm

Del.quantity cm3/: 90.0...54.0 1000 s: (88.0...96.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80

Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...175.0

1000 s: (130\.0...180.0)

Rack travel in mm : 11.90...12.90

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.50...5.70 Del.quantity cm3/ : 32.0...38.0 1000 s: (30.0...40.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Start-of-delivery mark 6° cam angle

after start of delivery cyl. 1

Note remarks

Test sheet : MAC 12.0 c3
Edition : 08.10.92
Replaces : 02.05.90

Test oil : ISO-4113

Combination no. : 0 402 746 876

Injection pump

Pump designation : PES6P120A720RS7157

EP type number : 0 412 726 814

Governor

Governor design. : RQV325...850PA929-3K

Governer no. : 0 421 815 232

Customer-spec. information

Customer : MACK TRUCKS

Engine : E7-300 4VH

1st version kW : 220.0 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter ma : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 20.4...20.6

100 s: (20.2...20.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...4.9 Del.quantity cm3/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm3: 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm: 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 650

travel mm : 5.60...5.80

4th speed rpm : 900

travel mm : 8.30...8.50

5th speed rpm : 1100

travel mm : 10.30...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 850 Aneroid pressure h: 1200

Del.quantity : 204.0...206.0

1000 : (202.0...208.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 51...59

Testina:

1st rack travel in: 11.20 Speed rpm : 890...900 2nd rack travel in: 4.00

Speed rpm : 1040...1070 4th rack travel in: 1150

Speed rom : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 7...15

Testing:

Speed וחסרו : 275 Minimum rack trave: 6.30 Speed : 325 rpm

Rack travel in mm: 4.70...4.90

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 12.20...12.30

2nd speed L DOW : 600

Rack travel in m: 12.50...12.70

3rd speed rpm : 500

Rack travel in m: 0.00...11.10

Aneroid/Altitude

Compensator Test

1st version

Setting

: 600 Speed morn Pressure hPa : 1200

Rack travel mm : 12.50...12.70

Measurement

Speed 1/min: 600

1st pressure hPa : -

Rack travel in m: 7.70...8.10

2nd pressure hPa : 265

Rack travel in m: 9.00...9.10 3rd pressure hPa : 565

Rack travel in m: 11.20...11.60

START CUT-OUT

1/min: 275 (285) Speed

G19

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed : 600 man

Del.quantity cm3/: 241.0...247.0 1000 s: (239.0...249.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: 1200

Speed : 850 וחכרו Del.quantity cm3/: 159.0...161.0 *

1000 s: (136.5...157.0)

Aneroid pressure h: -

: 400 Speed rpm

Del.quantity cm3/: 148.0...152.0 1000 s: (146.0...154.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

rpm : 890...900 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 180.0...220.0

1000 s: (170.0...230.0) Rack travel in mm: 10.00...10.60

LOW IDLE

Speed rpm : 325 Rack travel in mm : 4.70...4.90 Del.quantity cm3/: 40.0...46.0

1000 s: (38.0...48.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P16

* This test specification applies only to the engine/nozzle-and-holder assemblies on an injection-pump test bench: setting for test equipment, check value for engine equipment.

Note remarks

Test sheet : RVI 6,2 h : 21.09.92 Edition

Replaces : 04.92 Test oil : ISO-4113

: 0 402 746 883 Combination no.

Injection pump

Pump designation : PES6P110A320RS7198

EP type number : 0 412 716 802

Governor

Governor design. : RQV275...1250PA942K

Governer no. : 0 421 815 234

Customer-spec. information Customer : RVI

Engine : MIDRO6-06-26

1st version kW : 132.5 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.60...4.70 : (4.55,...4.75)

Rack travel in mm : 12.50...13.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 14.10...15.10 & maximum rack tra: 20.0...21.0 Difference * CS : 2.50...4.00

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 14.60...14.70

Del.quaritity cm3/: 15.7...15.9

100 s: (15.4...16.1)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 275.0 Rack travel in mm: 5.3...5.7 Del.quantity cm3/: 1.7...2.2

100 s: (1.4...2.4)

Spread cm3 : 0.4100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1300

: 9.50...9.70 travel mm

rpm : 275 2nd speed travel mm

: 0.90...1.10

3rd speed rpm : 550

: 3.80...4.20 travel mm

rpm : 1000 4th speed

travel mm : 7.10...7.50

rpm : 1600 5th speed

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1385 Speed

Rack travel in mm : 12.30...14.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 1250 Aneroid pressure h: 1000 Del.quantity : 157.0...159.0 1000 : (154.5...161.5) : 4.00 Spread cm3 1000 : (7.50) RATED SPEED 1st version Control Leven position degrees: 110...118 Testing: 1st rack travel in: 13.60 rpm : 1315...1325 2nd rack travel in: 4.00 rpm : 1475...1505 Speed 4th rack travel in: 1600 rom : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 58...66 Testing: besec rpm Minimum rack trave: 5.70 Speed rpm : 275 Rack travel in mm : 5.00...5.20 CONSTANT REGULATION Speed rpm : 350...480 TORQUE CONTROL Dimension a mm : ? Torque control curve - 1st version 1st speed rpm : 1250 Rack travel in m: 14.60...14.70 and speed rpm : 750
Rack travel in m: 13.70...13.90 2nd speed 3rd speed rpm : 300 Rack travel in m: 12.90...13.30 Aneroid/Altitude Compensator Test 1st version Setting : 1250 Speed rpm hPa : 1000 Pressure Rack travel mm : 14.60...14.70 Measurement 1/min: 1250 Speed 1st pressure hPa : -

Rack travel in m: 11.00...11.40

2nd pressure hPa : 360 Rack travel in m: 12.80...12.90 3rd pressure hPa : 220 Rack travel in m: 11.80...12.20 START CUT-OUT Speed 1/min : 200 (220) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 750 Del.quantity cm3/: 125.0...129.0 1000 s: (122.0...132.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 67.0...69.0 1000 s: (64.5...71.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.60 Speed rpm : 1315...1325 STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 85.0...115.0 1000 s: (81.0...119.0) LOW IDLE Speed rpm : 275 Rack travel in mm : 4.90...5.30 Del.quantity cm3/: 17.0...22.0 1000 s: (14.5...24.5) cm3 : 4.50Spread 1000 s: (7.50) Remarks: Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 25...27 Note remarks : 5.20...5.30 Prestroke mm (5.15...5.35) Rack travel in mm : 9.00...12.00 Test sheet : LIE Edition : 26.06.92 Firing order : 1-5-3-6-2-4 Replaces Test oil : ISO-4113 Combination no. : 0 402 746 932A Phasing : 0-60-120-180-240-300 Phasing Injection pump Tolerance + - * : 0.50 (G.75) Pump designation : PES6P120A720RS7258 BASIC SETTING EP type number : 0 412 726 862 Governor Governor design. : RQV300...1050PA1035 1st speed rom : 1050: 0 421 813 995 Governer no. Rack travel in mm : 13.40...13.50 Cust, part no. : 9274017 Del.quantity cm3/: 20.7...20.9 Customer-spec. information Customer : LIEBHERR 100 s: (20.4...21.2) Engine : D926Ti Spread cm3 : 0.51st version kW : 220.0 100 s: (0.9) Rated speed : 2100 rpa : 350.0 2nd speed TEST BENCH REQUIREMENTS Rack travel in mm: 6.5...7.1 Del.quantity cm3/: 3.0...3.6 Test oil 100 s: (2.7...3.9) inlet temp. °C : 38...42 Spread cm3 : 0.6100 s: (1.0) Overflow valve : 1 417 413 025 (B) Setting of injection pump with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL Test nozzle holder 1st speed mon : 350 : 1 688 901 105 assembly travel mm : 1.70...2.20 2nd speed rpm : 490 Opening : 3.30...3.80 travel mm : 207...210 pressure, bar 3rd speed : 780 rpm travel mm : 6.30...6.80 Orifice plate 4th speed : 1120 rpm diameter mm : 0,8 10.30...10.80 travel mm 5th speed 1320 rpm : 13.00...14.00 travel mm Test lines : 1 680 750 075 GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 x Length mm : 8.00x2.50x1000 rpm : 1150 Speed Rack travel in mm : 11.50...14.10 (A) Injection pump setting values Insp. values in parentheses FULL LOAD DELIV. AT FULL LOAD STOP

> 1st version Speed

rpm : 1050

Aneroid pressure h: 1500

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Del.quantity : 207.0...209.0 1000 : (204.0...212.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 102...110

Testing:

1st rack travel in: 12.50 rpm : 1100...1110 Speed

2nd rack travel in: 4.00

rpm : 1180...1210 Speed

4th rack travel in: 1300

rpm : 0.00...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 68...76

Testing:

Speed : 250 FIDE Minimum rack trave: 10.00 rpm : 350

Rack travel in mm : 6.70...6.90

Rack travel in mm: 2.00 Speed : 430...490 COM

CONSTANT REGULATION

Speed rpm : 350...450

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 700 hPa : 1500 Pressure

Rack travel mm : 13.40...13.50

Measurement

1/min: 700 Speed

1st pressure hPa : -

Rack travel in m: 10.50...10.70

2nd pressure hPa : 1050

Rack travel in m: 12.70...12.80

3rd pressure hPa : 720

Rack travel in m: 11.20...11.40

START CUT-OUT

Speed 1/min: 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 700 Speed

Del.quantity cm3/: 154.0...156.0 1000 s: (151.0...159.0)

cm3 : 8.00 Spread

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50

Speed rpm : 1100...1110

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 175.0...195.0

1000 s: (171.0...199.0)

Remarks:

Note remarks

Test sheet : PER

Edition : 05.10.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 934

Injection pump

Pump designation : PES6P120A320RS7256

EP type number : 0 412 726 879

Governor

Governor design. : RQV250...950PA793-3

: 0 421 814 014 Governer no.

Customer-spec. information Customer : PERKINS

Engine : EAGLE TX 375/400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 D19 assembly

Open inc

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.50...4.60 Prestroke mm

: (4.45...4.65)

Rack travel in mm : 12.00...13.00

Firing order : 1-4-2-6-3-5

: 0-60-120-180-240-300 Phasing

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 12.20...12.30

Del.quantity em5/: 26.2...26.4

100 s: (25.9...26.7)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 1.3...1.7 100 s: (1.0...2.0)

cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 0.90...1.40 travel mm

2nd speed rpm : 315

: 1.70...2.20 travel mm

3rd speed rpm : 670

: 3.90...4.40 travel mm

rpm : 985 4th speed

: 7.60...7.80 travel mm

rpm : 1250 5th speed

travel rm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1115

Rack travel in mm : 10.00...12.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 900 Aneroid pressure h: 1200

Del.quantity : 202.0...267.0)

Spread cm3 : 6.00 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 113...121

Testing:

1st rack travel in: 11.30 rpm : 980...990 Speed 2nd rack travel in: 4.00

Speed rpm : 1055...1085

4th rack travel in: 1200

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 80...88

Testine:

Speed mpm : 100 Minimum rack trave: 7.50 Speed

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rom : 250...450

Aneroid/Altitude Compensator Test

1st version Settina

: 600 Speed rom Pressure hPa : 1200

Rack travel mm : 12.20...12.30

Measurement

1/min : 600 Speed

1st pressure hPa : -

Rack travel in m: 8.20...8.40

2nd pressure hPa : 515
Rack travel in m: 11.10...11.20
3rd pressure hPa : 300
Rack travel in m: 9.10...9.30

START CUT-OUT

1/min: 170 (190) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed rpm : 600 Del.quantity cm3/: 142.0...144.0 1000 s: (139.0...147.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

Speed rpm : 980...990

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 193.0...230.0

1000 s: (187.0...233.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Note remarks

Test sheet : MB

Edition : 05.10.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 936

Injection pump

Pump designation : PES6P120A720LS7238

EP type number : 0 412 726 873

Governor

Governor design. : RQ300/1100PA1044

Governer no. : 0 421 801 670

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M447 hLA Engine

1st version kW : 220.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

: 6-2-4-1-5-3 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

Spread

1st speed rpm : 1100

Pack travel in mm: 14.50...14.60

Del.quantity cm3/: 22.0...22.2

100 s: (21.7...22.5)

cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 6.2...6.8

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 650

Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1000

: 220.0...222.0 Del.quantity

1000 : (217.0...225.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 650 Speed rpm

Rack travel in mm: 20.0 Testina: 1st rack travel in: 13.50 Speed rom : 1145...1160 2nd rack travel in: 4.00 rpm : 1215...1245 Speed 4th rack travel in: 1300 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.5 Testing: Speed rpm : 200 Minimum rack trave: 9.20 rpm : 300 Speed Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 rpm : 370...410 Speed TORQUE CONTROL Dimension a mm : ? Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 14.50...14.60 2nd speed rpm : 550 Rack travel in m: 15.40...15.60 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : Pressure : 11.00...11.20 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 200 Rack travel in m: 11.70...11.80 2nd pressure hPa : 550 Rab. travel in m: 13.90...14.10 3rd pressure hPa : 1000 Rack travel in m: 14.70...14.80 FUEL DELIVERY CHARACTERISTICS

Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 142.0...144.0 1000 s: (139.0...147.0) Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.50 Speed rpm : 1145...1160

:

Remarks:

1st version

Aneroid pressure h: 1000

Speed rpm : 550
Del.quantity cm3/: 237.0...241.0

1000 s: (234.0...244.0)

Note remarks

Test sheet : MAC Edition : 21.09.92 : 07.92 Replaces Test oil : ISO-4113

Combination no. : 0 402 748 807

Injection pump

Pump designation : PE\$8P120A920/4L\$7246

EP type number : 0 412 728 805

Governor

: RQV325...1000PA1018 Governor design.

-1K

Governer no. : 0 421 815 292

Customer-spec. information Customer : MACK

Engine : EE9 530

: 395.0 : 2000 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 103 assembly

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,7

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6./09x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.75...2.85

: (2.70...2.90) Rack travel in mm : 12.00...14.00

: 1-2-7-8-4-5-6-3 Firing order

: 0-45-90-135-180-225-Phasina

270-315

Tole ance + - ° : 0.50 (0.75)

: 1 Time to cyl. no.

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 13.60...13.70

Del.quantity cm3/: 29.3...29.5

100 s: (29.0...29.8)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 325.0 Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 2.4...3.0

100 s: (2.1...3.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.30...1.60

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 900

travel mm : 7.50...7.90

4th speed : 1050 rpm

: 8.90...9.10 travel mm

5th speed : 1300 מסמיז

travel mm : 11.50...11.90

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1240 Speed

Rack travel in mm: 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP Speed $1/\min : 1000$ 1st version 1st pressure hPa : -Speed : 500 Rack travel in m: 9.90...10.30 L.Du Aneroid pressure h: 1200 2nd pressure hPa : 235 Del.quantity : 293.0...295.0 Rack travel in m: 11.30...11.40 1000 : (290.0...298.0) 3rd pressure hPa : 610 Spread : 6.00 cm3 Rack travel in m: 14.40...14.80 1000 : (10.00) START CUT-OUT RATED SPEED 1/min: 280 (290) Speed 1st version Control lever FUEL DELIVERY CHARACTERISTICS position degrees: 62...70 Testing: 1st version 1st rack travel in: 15.30 Aneroid pressure h: 1200 rpm : 1055...1065 Speed Speed : 1000 rpm 2nd rack travel in: 4.00 Del.quantity cm3/: 306.5...312.5 Speed rpm : 1235...1265 4th rack travel in: 1350 1000 s: (303.5...315.5) Spread cm3 : 10.00Speed rpm : 0.00...1.001000 s: (14.0) Aneroid pressure h: -LOW IDLE 1 Speed rom : 400 Del.quantity cm3/: 184.5...188.5 Control lever position degrees: 10...18 1000 s: (181.5...191.5) Testing: Speed : 275 rpm BREAKAWAY Minimum rack trave: 1.00 : 325 Speed rom 1st version Rack travel in mm : 5.60...5.80 1mm rack travel less than CONSTANT REGULATION full load rack tr: 15.30 Speed rpm : 325...600 Speed rpm : 1055...1065 TORQUE CONTROL STARTING FUEL DELIVERY Dimension a mm : ? Torque control curve - 1st version : 500 1st speed nom Speed : 100 rpm Rack travel in m: 13.60...13.70 Del.quantity cm3/: 160.0...200.0 rpm : 1000 2nd speed 1000 s: (156.0...204.0) Rack travel in m: 16.30...16.50 Rack travel in mm : 11.00...12.00 : 700 3rd speed rpm Rack travel in m: 14.10...14.50 LOW IDLE rpm : 400 4th speed Rack travel in m: 13.20...13.60 rpm : 325 Speed Rack travel in mm : 5.60...5.80 Del.quantity cm3/ : 24.0...30.0 Aneroid/Altitude Compensator Test 1000 s: (21.0...33.0) Spread cm3 : 8.001000 s: (12.00) 1st version Setting Remarks: Speed : 1000 mon Pressure hPa : 1200 : 16.30...16.50 Rack travel mm Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 Measurement start of delivery

H01

Bow dimension:
Sliding-sleeve position = 37.0 mm
* This test specification applies only
to the engine/nozzle-and-holder
assemblies on an injection-pump test
bench: setting for test equipment,
check value for engine equipment.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : 21.08.92 Edition Replaces : 07.92 Test oil : ISO-4113 Combination no. : 0 403 246 033 Injection pump Pump designation : PES6MW100/720RS1511 EP type number : 0 413 206 011 Sovemor Governor design. : RQV300...1300MW125-6 Governer no. : 0 420 083 286 Customer-spec. information Customer : MERCEDES-BENZ Engine : 0M366LA 1st version kW : 156.0 Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly **Opening** pressure, bar : 172...175 Test lines : 1 680 750 089 Outside diameter x Wall thickness x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 30...32 Prestroke mm : 5.20...5.30 : (5.15...5.35) Rack travel in mm : 21.00...0.00

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - * : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1300 Rack travel in mm : 12.60...12.70 Del.quantity cn3/: 11.8...12.0 100 s: (11.6...12.2) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 300.0Rack travel in mm: 4.1...4.3 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6) Spread cm3 : 0.3100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1350 travel mm : 8.60...9.00 rpm : 880 2nd speed travel mm : 4.90...5.10 rpm : 500 3rd speed : 2.70...3.30 travel mm rpm : 3004th speed travel mm : 1.20...1.60 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1300 Aneroid pressure h: 1400 : 118.0...120.0 Del.quantity 1000 : (116.0...122.0) : 3.50 Spread cm3 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 118...126 Testina:

1st rack travel in: 11.60

rpm : 1340...1350 Speed

2nd rack travel in: 4.00

Speed rpm : 1455...1485 4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 61...69

Testina:

Speed rpm : 200 Minimum rack trave: 5.00 : 300 Speed rpm

Rack travel in mm : 4.10...4.30

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 500 rpm Pressure hPa : -

Rack travel mm : 6.60...6.80

Measurement

1/min : 500Speed

1st pressure hPa : 300

Rack travel in m: 7.20...7.40

2nd pressure hPa : 900

Rack travel in m: 11.90...12.10

3rd pressure hPa : 1400

Rack travel in m: 12.60...12.70

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400 : 750 Speed rpm

Dal.quantity cm3/: 111.5...114.5

1000 s: (109.0...117.0)

cm3 : 5.00 Spread

1000 s: (7,00)

Aneroid pressure h: -Speed

rpm : 500

Del.quantity cm3/: 35.0...37.0 1000 s: (33.0...39.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed : 100 rem

Del.quantity cm3/: 115.0...125.0 1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 4.10...4.30 Del.quantity cm3/: 10.0...14.0

1000 s: (7.5...16.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

H04

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

Test sheet : PER : 21.09.92 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 403 436 114

Injection pump

Pump designation : PES6MW100/320/3RS119 4-1

EP type number

: 0 413 406 221 Governor

Governor design. : RQV300...1300MW108K

Governer no. : 0 420 083 998 .

Customer-spec. information Customer : PERKINS

Engine : 180 TI

1st version kW : 134.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.30...3.40 Prestroke mm

: (3.25...3.45) Rack travel in mm : 12.00...14.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 14.30...14.40

Del.quantity cm3/: 13.4...13.6

100 s: (13.2...13.8)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0Rack travel in mm: 6.1...6.3 Del.quantity cm3/: 1.4...1.8

100 s: (1.1...2.0)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

10.00...10.40 travel mm

2nd speed rpm : 900

travel mm : 6.40...6.60

3rd speed rpm : 480

travel mm : 3.10...3.70

4th speed : 300 rpm

: 1.40...1.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1380 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 900

Del.quantity : 134.0...136.0 Rack travel in m: 10.40...10.50 1000 : (132.0...138.0) 2nd pressure hPa : 220 : 3.50 Spread cm3 Rack travel in m: 10.90...11.20 1000 : (6.00) 3rd pressure hPa : 900 Rack travel in m: 11.70...11.90 RATED SPEED START CUT-OUT 1st version Control lever 1/min : 240 (250) Speed position degrees: 118...126 FUEL DELIVERY CHARACTERISTICS Testing: 1st rack travel in: 13.30 rpm : 1340...1350 Speed 1st version 2nd rack travel in: 4.00 Aneroid pressure h: 900 rpm : 1480...1510 Speed : 800 Speed mar Del.quantity cm3/: 126.0...129.0 4th rack travel in: 1600 1000 s: (123.5...131.5) rpm : 0.00...1.00 Speed cm3 : 5.00Spread LOW IDLE 1 1000 s: (7.00) Control Lever Aneroid pressure h: 900 position degrees: 70...78 : 500 Speed rpm Del.quantity cm3/: 107.5...110.5 Testing: 1000 s: (105.0...113.0) Speed rpm : 200 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 61.0...63.0 Minimum rack trave: 7.50 Speed rpm : 300 Rack travel in mm : 6.10...6.30 1000 s: (59.0...65.0) CONSTANT REGULATION rpm : 330...500 Speed BREAKAWAY TORQUE CONTROL 1st version Dimension a mm : 2.60 1mm rack travel less than Torque control curve - 1st version 1st speed rpm : 1300 full load rack tr: 13.30 Rack travel in m: 14.30...14.40 rpm : 1340...1350 Speed rpm : 800 2nd speed Rack travel in m: 13.10...13.30 STARTING FUEL DELIVERY 3rd speed rpm : 500 Rack travel in m: 11.70...11.90 : 1000 4th speed rpm Speed : 100 rpm Del.quantity cm3/: 78.0...92.0 1000 s: (75.0...95.0) Rack travel in m: 13.60...13.90 5th speed rpm : 700 Rack travel in m: 12.60...12.90 Rack travel in mm : 19.00...21.00 Aneroid/Altitude LOW IDLE Compensator Test Speed : 300 rpm Rack travel in mm : 6.10...6.30 1st version Del.quantity cm3/: 14.0...18.0 Settina 1000 s: (11.5...20.5) Speed : 500 mqn Spread cm3 : 3.50Pressure hPa : -1000 s: (5.50) Rack travel mm : 9.20...9.40 Remarks: Measurement 1/min: 500 Speed

1st pressure hPa : 180

H06

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB Edition : 21.08.92 Replaces : ISO-4113 Test oil Combination no. : 0 403 444 113A Injection pump EP type number : 0 413 404 104 Governor : 0 420 083 129 Governer no. Customer-spec. information Customer : MERCEDES-BENZ Engine : OM 364 LA 1st version kW : 85.0 Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 089 Outside diameter x Wall thickness x Length mm : 8.00x2.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BASIC SETTING rpm : 13001st speed Pump designation : PES4MW100/720RS1151 Rack travel in mm : 10.70...10.80 Del.quantity cm3/: 8.0...8.2 Governor design. : RQV300...1300MW50-3 100 s: (7.8...8.4) Spread cm3 : 0.3100 s: (0.6) rpm : 300.02nd speed Rack travel in mm: 6.8...6.9 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6) Spread cm3 : 0.3100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1340 1st speed : 8.50...8.70 travel mm 2nd speed rpa : 1450 : 9.50...9.90 travel mm 3rd speed rpm : 500 : 2.70...3.30 travel mm 4th speed rpm : 300 : 1.30...1.70 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1340 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1300 Speed Aneroid pressure h: 700 : 80.0...82.0 Del.quantity BEGINNING OF DELIVERY 1000 : (78.0...84.0) Test pressure, bar: 30...32 : 3.50 Spread cm3 1000 : (6.00) Prestroke mm : 3.70...3.80 : (3.65...3.85) RATED SPEED Rack travel in mm : 9.00...12.00 H07

Firing order

Tolerance + - °

Phasing

: 1-3-4-2

: 0-90-180-270

: 0.50 (0.75)

1st version Control Lever

position degrees: 99...107

Testing:

1st rack travel in: 10.70

rpm : 1340...1350 Speed

2nd rack travel in: 4.00

rpm : 1445...1475 Speed

4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 72...80

Testing:

Speed rpm : 200 Minimum rack trave: 8.40 : 300 Speed f 'Offi

Rack travel in mm : 6.80...6.90

CONSTANT REGULATION

Speed rom : 320...550

TORQUE CONTROL

Dimension a mm : 0.90

Torque control curve - 1st version

1st speed rpm : 1300

Rack travel in m: 10.70...10.80

2nd speed rpm : 750

Rack travel in m: 11.60...11.80

3rd speed rpm : 1175 Rack travel in m: 11.00...11.40

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 MCU Pressure hPa : -

: 10.00...10.20 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 300

Rack travel in m: 11.00...11.20

3rd pressure hPa : 700

Rack travel in m: 11.60...11.80

START CUT-OUT

Speed 1/min: 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 750
Del.quantity cm3/ : 75.5...78.5
1000 s: (73.0...81.0)

cm3 : 5.00 Spread

1000 s: (7.00)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 46.0...48.0 1000 s: (44.0...50.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70

Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Spæd : 100 ("DIN

Del.quantity cm3/: 85.0...95.0

1000 s: (82.0...98.0)

LOW IDLE

Speed rpin : 300

Rack travel in mm : 6.80...6.90

Del.quantity cm3/: 10.0...14.0

1000 s: (7.5...16.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB : 21.08.92 Edition Replaces : 06.92 Test oil : ISO-4113 Combination no. : 0 403 444 139 Injection pump Pump designation : PES4MW100/720RS1151 EP type number : 0 413 404 104 Governor Governor design. : RQV300...1300MW67-7 Governer no. : 0 420 083 278 Customer-spec, information Customer : MERCEDES-BENZ : 0M364A Engine 1st version kW : 79.0 Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. *C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test Lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Phasing : 0-90-180-270 Tolerance + - ° : 0.50 (0.75) BASIC SEITING 1st speed rpm: 1300 Rack travel in mm: 10.80...10.90 Del.quantity cm3/: 8.2...8.4 100 s: (8.0...8.6) Spread cm3 : 0.3100 s: (0.6) rpm : 300.02nd speed Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1350 1st speed travel mm : 8.40...8.80 2nd speed rpm : 880 : 4.90...5.10 travel mm 3rd speed rpm : 500 : 2.70...3.30 travel mm 4th speed rpm : 300 : 1.20...1.60 travel ma GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1350 Rack travel in mm: 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1300 Aneroid pressure h: 700 Del.quantity : 82.0...84.0 1000 : (80.0...86.0) Spread cm3 : 3.50 1000 : (6.00) RATED SPEED

firing order

: 1-3-4-2

H09

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 30...32

Rack travel in mm : 9.00...12.00

: 3.70...3.80 : (3.65...3.85)

1st version Control Lever position degrees: 108...116 Setting point: Speed Rack travel in mm: 16.5 Testing: 1st rack travel in: 9.80 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 : 1420...1450 Speed rpm 4th rack travel in: 1500 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 74...82 Testing: Speed : 200 rpm Minimum rack trave: 8.00 : 300 Speed rpm Rack travel in mm : 6.30...6.50 Rack travel in mm: 2.00 Speed : 480...540 rom TORQUE CONTROL Dimension a mm : 0.80 Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 10.80...10.90 2nd speed rpm : 600 Rack travel in m: 11.60...11.70 3rd speed rpm : 1000 Rack travel in m: 11.60...11.70 4th speed npm : 1175 Rack travel in m: 11.30...11.50 Anaroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 : 9.70...9.80 Rack travel mm Measurement Speed 1/min: 500 1st pressure hPa : 150 Rack travel in m: 10.30...10.50 2nd pressure hPa : 300 Rack travel in m: 11.30...11.50 3rd pressure hPa : 700 Rack travel in m: 11.60...11.70

Speed 1/min : 200 (230) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 : 600 rpm Del.quantity cm3/ : 75.0...78.0 1000 s: (72.5...80.5) Spread cm3 : 5.001000 s: (7.00) Aneroid pressure h: -Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 46.0...48.0 1000 s: (44.0...50.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.80 rpm : 1340...1350 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0) LOW IDLE Speed rpm Rack travel in mm : 6.30...6.50 Del.quantity cm3/ : 10.0...14.0 1000 s: (7.5...16.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks:

START CUT-OUT

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 30...32 : 3.25...3.35 : (3.20...3.40) Note remarks Prestroke mm Rack travel in mm : 9.00...12.00 Test sheet : IHC Edition : 21.08.92 Firing order : 1-5- 3- 6- 2- 4 Replaces Test oil : ISO-4113 Combination no. : 0 403 446 239AA Phasing : 0-60-120-180-240-300 Phasing Injection pump Tolerance + - * : 0.50 (0.75) Pump designation : PES6MW100/320RS1189 : 0 413 406 177 EF type number Time to cyl. no. : i Governor Governor design. : RQV350...1200MW46-21 BASIC SETTING : 0 420 083 201 Governer no. 1st speed rom: 1200 Cust. part no. : 18199**0**1091 Rack travel in mm : 12.50...12.60 Customer-spec. information Customer : NAVISTAR Del.quantity cm3/: 13.0...13.4 Engine : DTA-466 100 s: (12.8...13.6) 1st version kW : 186.0 Spread cm3 : 0.3Rated speed : 2400 100 s: (0.6) TEST BENCH REQUIREMENTS 2nd speed rpm : 350.0 Test oil Rack travel in mm: 5.3...5.5 inlet temp. °C : 38...42 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) Overflow valve Spread cm3 : 0.3: 2 417 413 038 100 s: (0.5) Inlet press., bar: 2.80 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 101 assembly GUIDE SLEEVE TRAVEL rpm : 1450 1st speed Opening : 9.80...10.20 travel mm pressure, bar : 207...210 rpm : 1250 2nd speed : 7.90...8.10 travel mm Orifice plate 3rd speed : 550 **CDM** diameter mm : 3.10...3.70 : 0.6 travel mm 350 4th speed rpm travel mm Test lines : 1 680 750 008 Outside diameter x Wall thickness 1st version : 6.00X2.00X600 x Lenath mm Speed rpm : 1200 Aneroid pressure h: 1200 (A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

1st version Control lever

position degrees: 104...112

Testing:

1st rack travel in: 11.50

rpm ; 1270...1290 Speed

2nd rack travel in: 4.00

rpm : 1400...1410 Speed

4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 68...76

Testina:

rpm : 100 Speed Minimum rack trave: 9.00 rpm : 350 Speed

Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

rpm : 300...450 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 חמרו hPa : Pressure

: 9.00...9.10 Rack travel mm

Measurement

1/min : 500 Speed

1st pressure hPa : 335

Rack travel in m: 10.00...10.10

2nd pressure hPa : 645

Rack travel in m: 11.40...11.80

3rd pressure hPa : 1200 Rack travel in m: 12.50...12.60

START CUT-OUT

1/min: 280 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 rpm : 800

Del.quantity cm3/: 133.5...135.5

1000 s: (131.5...137.5)

Spread cm3 : 6.50

1000 s: (7.00)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 68.0...70.0

1000 s: (66.0...72.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 1270...1290

STARTING FUEL DELIVERY

Speed : 100 CDM

Del.quantity cm3/: 150.0...190.0 1000 s: (147.0...193.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed man : 350

Rack travel in mm : 5.30...5.50 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before

shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : IHC

Edition : 21.08.92 Replaces Test oil : ISO-4113

Combination no. : 0 403 446 2548A

Injection pump

Pump designation : PES6MW100/320RS1189

: 0 413 406 177 EP type rurber

Governor

Governor design. : RQV350...1200MW46-29

Governer no. : 0 420 083 217

Cust. part no. : 1819902091

Customer-spec. information Customer : NAVISTAR

Engine : DTA-466

: 186.0 1st version kW Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

assembly : 1 688 901 101

Opening

: 207...210 pressure, bar

Orifice plate

diameter man : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.25...3.35 Prestroke mm

: (3.20...3.40)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Phasing Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 13.0...13.4

100 s: (12.8...13.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 5.3...5.5 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2) cm3 : 0.3Spread

100 s: (G.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1450 1st speed

: 9.80...10.20 travel mm

rpm : 1250 2nd speed

travel mm : 7.90...8.10

rpm : 550 3rd speed

travel ma : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200 Aneroid pressure h: 1200

Del.quantity : 130.0...134.0 1000 : (128.0...136.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 104...112

Testing:

1st rack travel in: 11.50

rpm : 1270...1290 Speed

2nd rack travel in: 4.00

rpm : 1400...1410 Speed

4th rack travel in: 1550

npm : 0.00...1.00Speed

LOW IDLE 1

Control Lever

position degrees: 68...76

Setting point w/out bumper spring

Speed rom Rack travel in mm : 5.4

Testing:

Speed : 100 rpm -Minimum rack trave: 9.00 Speed : 350 man

CONSTANT REGULATION

nom : 300...450 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed LOU Pressure hPa :

: 9.00...9.10 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : 335

Rack travel in m: 10.00...10.10

2nd pressure hPa : 645

Rack travel in m: 11.40...11.80 3rd pressure hPa : 1200

Rack travel in m: 12.50...12.60

START CUT-OUT

1/min : 280 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

rpm : 800 Speed

Del.quantity cm3/: 133.5...135.5

1000 s: (131.5...137.5)

Spread cm3 : 6.50

1000 s: (7.00)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 68.0...70.0

1000 s: (66.0...72.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

rpm : 1270...1290 Speed

STARTING FUEL DELIVERY

Speed rpm

Del.quantity cm3/: 150.0...190.0

1000 s: (147.0...193.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.30...5.50 Del.quantity cm3/ : 16.0...20.0

1000 s: (13.5...22.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

In unlatched condition, do not

operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before

shutoff.

Note remarks

Edition : 21.08.92 : 02.91 Replaces Test oil : ISO-4113

Combination no. : 0 403 446 271

Injection pump

Pump designation : PES6MW100/720RS1144

EP type number : 0 413 496 138

Governor

Governor design. : RQV300...1300MW50-11

: 0 420 083 235 Governer no.

Customer-spec. information Customer : M3-NF7

: OM366A Engine

1st version kW : 129.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina .

pressure, bar : 172...175

Test Lines : 1 680 750 089

Outside diameter

x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm: 11.40...11.50

Del.quantity cm3/ : 7.8...8.0

100 s: (7.6...8.2)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm: 8.4...8.6

Del.quantity cm3/: 0.9...1.3 100 s: (0.6...1.5)

Spread cm3 : 0.3 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450 travel mm 9.10...9.50

2nd speed rpm : 1345

: 8.20...8.40 travel mm

rpm : 500 3rd speed

: 3.80...4.40 travel mm

4th speed : 300 rpm

travel mm : 1.10...1.50

5th speed rpm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 1300Aneroid pressure h: 900

Del.quantity : 78.0...80.0

1000 : (76.0...82.0)

Spread : 3.50 cm3

1000 : (6.00)

RATED SPEED

H15

1st version Control lever position degrees: 110...118 Setting point: Speed rpm : 1350 Rack travel in mm : 16.5 Testina: 1st rack travel in: 10.40 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 Speed rpm : 1440...1470 4th rack travel in: 1550 Speed rom : 0.00...1.00LOW IDLE 1 Control lever position degrees: 81...89 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 8.5 Testina: Speed : 200 COM Minimum rack trave: 10.00 : 300 חמיו Rack travel in mm : 8.40...8.60 CONSTANT REGULATION rpm : 330...500 Speed TORQUE CONTROL Dimension a mm : 0.80 Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 11.40...11.50 2nd speed rpm : 600 Rack travel in m: 12.20...12.30 3rd speed rpm : 900 Rack travel in m: 11.80...12.00 Aneroid/Altitude Compensator Test 1st version Settina Speed : 500 man Pressure hPa : -Rack travel mm : 10.50...10.60 Measurement 1/min: 500 Speed

Rack travel in m: 12.20...12.30 START CUT-OUT 1/min: 230 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 Speed rpm : 600 Del.quantity cm3/ : 67.0...79.0 1000 s: (64.5...72.5) cm3 : 5.00Spread 1000 s: (7.00) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 37.0...39.0 1000 s: (35.0...41.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.40 rpm : 1340...1350 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 8.40...8.60 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) cm3 : 3.50 1000 s: (5.50) Spread Remarks:

1st pressure hPa : 225

2nd pressure hPa : 325

3rd pressure hPa : 900

Rack travel in m: 11.20...11.40

Rack travel in m: 11.90...12.10

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Edition : 21.08.92 Replaces : 02.91 Test oil : ISO-4113 Combination no. : 0 403 446 274 Injection pump Pump designation : PES6MW100/720RS1131 EP type number : 0 413 406 123 Governor Governor design. ; RQ300/1300MW105-10 : 0 420 082 062 Governer no. Customer-spec. information Customer : MERCEDES-BENZ Engine : OM 366 A : 121.0 1st version kW Rared speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. *C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly **Opening** pressure, bar : 172...175 Test lines : 1 680 715 089 Outside diameter x Wall thickness x Length mm : 8.00x2.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Tolerance + - * : 0.50 (0.75) BASIC SETTING 1st speed	Phasing :	0-60-120-180-240-300
1st speed	Tolerance + - ° :	0.50 (0.75)
Rack travel in mm: 10.9011.00 Del.quantity cm3/: 8.89.0 100 s: (8.69.2) Spread cm3: 0.3 100 s: (0.6) 2nd speed rpm: 300.0 Rack travel in mm: 6.16.3 Del.quantity cm3/: 1.01.4 100 s: (0.71.6) Spread cm3: 0.3 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -2 Speed rpm: 1200 Rack travel in mm: 14.7016.30 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm: 1300 Aneroid pressure h: 700 Del.quantity: 88.090.0 1000: (86.092.0) Spread cm3: 3.50 1000: (6.00) RATED SPEED 1st version Setting point: Speed rpm: 1200 Rack travel in mm: 15.5 Testing: 1st rack travel in: 9.90 Speed rpm: 13451360 2nd rack travel in: 4.00 Speed rpm: 14101440 4th rack travel in: 1500	BASIC SETTING	
Del.quantity cm3/: 8.89.0 100 s: (8.69.2) Spread cm3 : 0.3 100 s: (0.6) 2nd speed rpm : 300.0 Rack travel in mm : 6.16.3 Del.quantity cm3/: 1.01.4 100 s: (0.71.6) Spread cm3 : 0.3 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -2 Speed rpm : 1200 Rack travel in mm : 14.7016.30 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1300 Aneroid pressure h: 700 Del.quantity : 88.090.0 200 (86.092.0) Spread cm3 : 3.50 1000 : (86.092.0) RATED SPEED 1st version Setting point: Speed rpm : 1200 Rack travel in mm : 15.5 Testing: 1st rack travel in: 9.90 Speed rpm : 13451360 2nd rack travel in: 4.00 Speed rpm : 14101440 4th rack travel in: 1500	1st speed rpm:	1300
100 s: (8.69.2) Spread cm3 : 0.3 100 s: (0.6) 2nd speed rpm : 300.0 Rack travel in mm : 6.16.3 Del.quantity cm3/ : 1.01.4 100 s: (0.71.6) Spread cm3 : 0.3 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -2 Speed rpm : 1200 Rack travel in mm : 14.7016.30 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1300 Aneroid pressure h: 700 Del.quantity : 88.090.0 1000 : (86.092.0) Spread cm3 : 3.50 1000 : (6.00) RATED SPEED 1st version Setting point: Speed rpm : 1200 Rack travel in mm : 15.5 Testing: 1st rack travel in: 9.90 Speed rpm : 13451360 2nd rack travel in: 4.00 Speed rpm : 14101440 4th rack travel in: 1500	Rack travel in mm :	10.9011.00
Spread cm3 : 0.3 100 s: (0.6)	Del.quantity cm3/:	8.89.0
2nd speed rpm : 300.0 Rack travel in mm : 6.16.3 Del.quantity cm3/ : 1.01.4	100 s:	(8.69.2)
2nd speed	Spread cm3 :	0.3
Rack travel in mm: 6.16.3 Del.quantity cm3/: 1.01.4	100 s:	(0.6)
Control-lever position Degree: -2 Speed rpm: 1200 Rack travel in mm: 14.7016.30 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm: 1300 Aneroid pressure h: 700 Del.quantity: 88.090.0 1000: (86.092.0) Spread cm3: 3.50 1000: (6.00) RATED SPEED 1st version Setting point: Speed rpm: 1200 Rack travel in mm: 15.5 Testing: 1st rack travel in: 9.90 Speed rpm: 13451360 2nd rack travel in: 4.00 Speed rpm: 14101440 4th rack travel in: 1500	Rack travel in mm : Del.quantity cm3/ : 100 s: Spread cm3 :	6.16.3 1.01.4 (0.71.6) 0.3
1st version Speed rpm: 1300 Aneroid pressure h: 700 Del.quantity: 88.090.0 1000: (86.092.0) Spread cm3: 3.50 1000: (6.00) RATED SPEED 1st version Setting point: Speed rpm: 1200 Rack travel in mm: 15.5 Testing: 1st rack travel in: 9.90 Speed rpm: 13451360 2nd rack travel in: 4.00 Speed rpm: 14101440 4th rack travel in: 1500	Control-lever posit Degree: Speed rpm :	ion -2 1200
Speed rpm: 1300 Aneroid pressure h: 700 Del.quantity: 88.090.0 1000: (86.092.0) Spread cm3: 3.50 1000: (6.00) RATED SPEED 1st version Setting point: Speed rpm: 1200 Rack travel in mm: 15.5 Testing: 1st rack travel in: 9.90 Speed rpm: 13451360 2nd rack travel in: 4.00 Speed rpm: 14101440 4th rack travel in: 1500	FULL LOAD DELIV. AT	FULL LOAD STOP
1st version Setting point: Speed rpm : 1200 Rack travel in mm : 15.5 Testing: 1st rack travel in: 9.90 Speed rpm : 13451360 2nd rack travel in: 4.00 Speed rpm : 14101440 4th rack travel in: 1500	Speed rpm : Aneroid pressure h: Del.quantity : 1000 : Spread cm3 :	700 88.090.0 (86.092.0) 3.50
Setting point: Speed rpm : 1200 Rack travel in mm : 15.5 Testing: 1st rack travel in: 9.90 Speed rpm : 13451360 2nd rack travel in: 4.00 Speed rpm : 14101440 4th rack travel in: 1500	RATED SPEED	
Speed rpm: 1200 Rack travel in mm: 15.5 Testing: 1st rack travel in: 9.90 Speed rpm: 13451360 2nd rack travel in: 4.00 Speed rpm: 14101440 4th rack travel in: 1500	1st version	
1st rack travel in: 9.90 Speed rpm : 13451360 2nd rack travel in: 4.00 Speed rpm : 14101440 4th rack travel in: 1500	Speed rpm:	
	1st rack travel in: Speed rpm : 2nd rack travel in: Speed rpm : 4th rack travel in:	13451360 4.00 14101440 1500

BEGINNING OF DELIVERY

Prestroke mm

Firing order

Test pressure, bar: 30...32

Rack travel in mm : 9.00...12.00

: 3.70...3.80

: (3.65...3.75)

: 1-5-3-6-2-4

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 6.2

Testina:

Speed rom : 200 Minimum rack trave: 8.00 rpm : 300 Speed

Rack travel in mm : 6.10...6.30

Rack travel in mm : 2.00 Speed rpm : 510...550

TORQUE CONTROL

Dimension a mm : 0.70

Torque control curve - 1st version

1st speed rpm : 1300

Rack travel in m: 10.90...11.00

2nd speed

nd speed rpm : 750 Rack travel in m: 11.60...11.70

3rd speed rpm : 1100

Rack travel in m: 11.10...11.30

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 500 rom Pressure hPa : -

Rack travel mm : 9.80...9.90

Measurement

1/min : 500 Speed

1st pressure hPa : 200

Rack travel in m: 10.20...10.30

2nd pressure hPa : 400

Rack travel in m: 11.10...11.40 3rd pressure hPa : 700

Rack travel in m: 11.60...11.70

START CUT-OUT

Speed 1/min : 200 (230)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 750 Del.quantity cm3/: 86.0...89.0

1000 s: (83.5...91.5)

Spread cm3 : 5.00

1000 s: (7.00)

Aneroid pressure h: -Speed

rpm : 500

Del.quantity cm3/: 49.0...51.0

1000 s: (47.0...53.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90

Speed rpm : 1345...1360

STARTING FUEL DELIVERY

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 6.10...6.30 Del.quantity cm3/ : 10.0...14.0

1000 s: (7.5...16.5)

cm3 : 3.50 1000 s: (5.50) Spread

.

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Edition : 21.08.92 : 02.91 Replaces Test oil : ISO-4113 Combination no. : 0 403 446 278 Injection pump Pump designation : PES6MW100/720RS1131 : 0 413 406 123 EP type number Governor Governor design.: RQV300...1300MW50-17 : 0 420 083 244 Governer no. Customer-spec, information Customer : MERCEDES-BENZ : 0M 366 LA Engine 1st version kW : 150.0 : 26CO Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. *C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening. pressure, bar : 172...175 Test lines : 1 680 750 089 Outside diameter x Wall thickness : 8.00x2.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

```
Phasing
                  : 0-60-120-180-240-300
Tolerance + - *
                  : 0.50 (0.75)
BASIC SETTING
1st speed
              rpm: 1300
Rack travel in mm : 12.20...12.30
Del.quantity cm3/: 9.6...9.8
             100 s: (9.4...10.0)
Spread
             cn3 : 0.3
             100 s: (0.6)
2nd speed
             rom : 300.0
Rack travel in mm: 6.1...6.3
Dal.quantity cm3/ : 0.9...1.3
             100 s: (0.7...1.5)
Spread
             cm3 : 0.3
             100 s: (0.5)
(B) Setting of injection pump
    with governor
GUIDE SLEEVE TRAVEL
             rpm : 1500
1st speed
                  : 9.80...10.20
  travel mm
             rpm : 1350
2nd speed
                  : 8.40...8.60
  travel mm
3rd speed
             rpm
                 : 670
  travel mm
                  : 4.60...5.20
                 : 300
4th speed
             rpm
                  : 1.10...1.50
  travel mm
GUIDE SLEEVE POSITION
Control-lever position
            Degree: -1
Speed
             rpm : 1370
Rack travel in mm : 15.20...17.80
FULL LOAD DELIV. AT FULL LOAD STOP
1st version
Speed
            rpm : 1300
Aneroid pressure h: 700
                 : 96.5...98.5
Del.quantity
            1000 : (94.5...100.5)
                 : 3.50
Spread
            cm3
                 : (6.00)
            1000
RATED SPEED
```

H19

per values

BEGINNING OF DELIVERY

Prestroke mm

Firing order

Test pressure, bar: 30...32

Rack travel in mm : 9.00...12.00

: 3.70...3.80 : (3.65...3.85)

: 1-5- 3- 6- 2- 4

1st version

Control lever

position degrees: 107...115

Setting point:

Speed : 1370 LIDU Rack travel in mm: 16.5

Testing:

1st rack travel in: 11.20

Speed rpm : 1340...1350

2nd rack travel in: 4.00

: 1460...1490 Speed COM

4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 55...63

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 6.2

Testing:

: 100 Speed (Din

Minimum rack trave: 7.60

rom : 300

Rack travel in mm : 6.10...6.30

Rack travel in mm: 2.00

CONSTANT REGULATION

rpm : 350...550 Speed

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 500 mqn

Pressure hPa : -

Rack travel mm : 10.20...10.30

Measurement

Speed 1/min : 500

1st pressure hPa : 170

Rack travel in m: 10.90...11.00

2nd pressure hPa : 225
Rack travel in m: 11.90...12.20
3rd pressure hPa : 700

Rack travel in m: 12.20...12.30

START CUT-OUT

Speed 1/min: 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

H20

Aneroid pressure h: 700

rpm : 575

Del.quantity cm3/: 82.0...85.0

1000 s: (79.5...87.5)

cm3 : 5.00 Spread

1000 s: (7.00)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 50.5...52.5

1000 s: (48.5...54.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 90.0...100.0

1000 s: (87.0...103.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 6.10...6.30

Del.quantity cm3/: 9.0...13.0

1000 s: (7.0...15.0)

cm3 : 3.50

1000 s: (5.50)

Remarks:

Spread

Note remarks

: MMM 6,2 F Test sheet Edition : 21.08.92 Roplaces : 04.92 Test oil : ISO-4113

Combination no. : 0 403 446 292

Injection pump

Pump designation : PES6MW100/720RS1131-

EP type number : 0 413 406 165

Governor

Governor design: : RQV300...1300MW123

: 0 420 083 255 Governer no.

Customer-spec, information

Customer : MERCEDES-BENZ

: 0M366LA Engine

1st version kW : 170.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 089

Outside diameter x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

> Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.40...14.50

Del.quantity cm3/: 11.4...11.6

100 s: (11.2...11.8)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL 1st speed

rpm : 1450 : 9.40...9.80 travel mm rpm : 1350 2nd speed

travel mm : 8.40...8.60

3rd speed : 600 rpm : 3.70...4.30 travel mm

: 300 4th speed rpm

: 0.80...1.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1350 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 1000

: 114.0...116.0 Del.quantity

1000 : (112.0...118.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever position degrees: 110...118 Setting point: Speed : 1350 rpm Rack travel in mm: 16.5 Testing: 1st rack travel in: 13.40 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1480...1510 Speed 4th rack travel in: 1600 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 72...80 Setting point w/out bumper spring rpm Speed Rack travel in mm: 6.4 Testing: Speed : 200 rom Minimum rack trave: 8.00 Speed rpm : 300 Rack travel in mm: 6.30...6.50 Rack travel in mm: 2.00 Speed rpm : 440...500 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : -Pressure : 10.70...10.80 Rack travel mm Measurement Speed 1/min: 500 1st pressure hPa : 200 Rack travel in m: 11.50...11.70 2nd pressure hPa : 400 Rack travel in m: 13.30...13.50 3rd pressure hPa : 1000 Rack travel in m: 14.40...14.50 START CUT-OUT 1/min: 180 (200) Speed

FUEL DELIVERY CHARACTERISTICS

: 750 Speed rpm Del.quantity cm3/: 106.5...109.5 1000 s: (104.0...112.6) Spread cm3 : 5.00 1000 s: (7.00) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 41.0...43.0 1000 s: (39.0...45.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.40 rpm : 1340...1350 Speed STARTING FUEL DELIVERY Speed rpm Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0) LOW IDLE rpm : 300 Speed Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3 : 3.501000 s: (5.50) Remarks:

Aneroid pressure h: 1000

H22

1st version

Note remarks

Test sheet : MMM 6,2 F Edition : 21.08.92 Replaces : 04.92 Test oil : ISO-4113

Combination no. : 0 403 446 294

Injection pump

Pump designation : PES6FW100/720RS1131-

En type number : 0 413 406 165

Governor

Governor design. : RQV350...1100MW67-4

Governer no. : 0 420 083 261

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M365LA

1st version kW : 162.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 089

Outside diameter x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values

insp. values in parentheses Set equal delivery quant.

per values

SEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.60...3.70 Prestroke mm

: (3.55...3.75)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 13.60...13.70

Del.quantity cm3/: 11.2...11.4

100 s: (11.0...11.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1150 1st speed

travel mm : 7.70...8.10 900

2nd speed man:

5.80...6.00 travel mm mom : 500

3rd speed travel mm : 2.50...3.10

4th speed rpm : 350

: 1.20...1.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1150 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

travel mm

rpm : 1100 Speed Aneroid pressure h: 1000

Del quantity : 112.0...114.0

1000 : (110.0...116.0) Spread

cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version Control lever position degrees: 120...128 Setting point: Speed : 1150 rpm Rack travel in mm: 16.5 Testing: 1st rack travel in: 12.60 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1285...1315 Speed 4th rack travel in: 1450 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 74...82 Setting point w/out bumper spring : 350 rom Rack travel in mm: 5.4 Testina: Speed rpm : 200 Minimum rack trave: 7.00 Speed rpm : 350 Pack travel in mm : 5.30...5.50 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : -Pack travel mm : 9.40...9.50 Measurement 1/min: 500 Speed 1st pressure hPa : 400 Rack travel in m: 10.60...10.80 2nd pressure hPa : 600 Rack travel in m: 12.60...12.80 3rd pressure hPa : 1000 Rack travel in m: 13.60...13.80 START CUT-OUT 1/min: 250 (270) Speed FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 104.5...107.5 1000 s: (102.0...110.0) cm3 : 5.00 1000 s: (7.00) Spread Aneroid pressure h: -Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 35.0...37.0 1000 s: (33.0...39.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.60 rpm : 1140...1150 Speed STARTING FUEL DELIVERY : 100 Speed COIN Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0)

LOW IDLE

Remarks:

H24

Speed

1st version

Aneroid pressure h: 1000

rpm : 600

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks Test sheet : MWM 6,2 F Edition : 21.08.92 Phasing : 0-60-120-180-240-300 Replaces : MAM 6,2 Test oil : ISO-4113 Tolerance + - * : 0.50 (0.75) : 0 403 446 295 Combination no. BASIC SETTING Injection pump 1st speed rpm: 1300 Pump designation : PES6MW100/720RS1131-Rack travel in mm : 13.10...13.20 EP type number : 0 413 406 165 Governor Del.quantity cm3/: 9.8...10.0 Governor design. : RQV300...1300MW67-5 Governer no. : 6 420 083 262 100 s: (9.6...10.2) Customer-spec, information Spread cm3 : 0.3Customer : MERCEDES-BENZ 100 s: (0.6) Engline : CM 366 LA rpm : 300.02nd speed 1st version kW : 155.0 Rack travel in mm: 6.1...6.3 : 2600 Rated speed Del.quantity cm3/: 0.9...1.3 100 s: (0.6...1.5) TEST BENCH REQUIREMENTS bsance cm3 : 0.3100 s: (0.5) Test oil inlet temp. °C : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 419 992 198 GUIDE SLEEVE TRAVEL rpm : 1350 1st speed Inlet press., bar: 1.50 travel min : 8.40...8.80 2nd speed rpm : 880 Test nozzle holder travel mm : 4.90...5.10 : C 681 343 009 assembly rpm : 500 3rd speed travel mm : 2.70...3.30 Opening : 300 4th speed rpm pressure, bar : 172...175 : 1.20...1.60 travel mm GUIDE SLEEVE POSITION : 1 680 750 089 Test lines Control-lever position Degree: -1 Outside diameter rpm : 1350 Speed x Wall thickness Rack travel in mm : 15.20...17.80 x Length mm : 8.00x2.50x600 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Speed rpm : 1300 per values _ Aneroid pressure h: 1000 : 98.0...100.0 Del.quantity BEGINNING OF DELIVERY 1000 : (96.0...102.0) Test pressure, bar: 30...32 : 3.50 Spread cm3 1000 : (6.00) : 3.60...3.70 Prestroke mm

RATED SPEED

: (3.55...3.75)

1st version Control Lever position degrees: 116...124 Setting point: Speed : 1350 rom Rack travel in mm: 16.5 Testing: 1st rack travel in: 12.10 rpa : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1450...1480 4th rack travel in: 1550 Speed rpm : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 72...80 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.2 Testing: Speed : 200 rpm Minimum rack trave: 7.50 rpm : 300 Rack travel in mm: 6.10...6.30 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : Rack travel mm : 10.20...10.30 Measurement Speed $1/\min : 500$ 1st pressure hPa : 200 Rack travel in m: 11.20...11.30 2nd pressure hPa : 350 Rack travel in m: 12.10...12.40 3rd pressure hPa : 1000 Rack travel in m: 13.10...13.20

1st version Aneroid pressure h: 1000 Speed rpm : 600 Del.quantity cm3/ : 85.0...88.0 1000 s: (82.5...90.5) cm3 : 5.00 Spread 1000 s: (7.00) Aneroid pressure h: -Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 35.0...37.0 1000 s: (33.0...39.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.10 rpm : 1340...1350 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 6.10...6.30 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) cm3 : 3.50 Spread 1000 s: (5.00) Remarks:

Speed

START CUT-OUT

1/min: 220 (250)

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : MWM 6,2 F Edition : 21.08.92 Replaces : 04.92 Test oil : ISO-4113

Combination no. : 0 403 446 306

Injection pump

Pump designation : PES6MW100/720RS1131

EP type number : 0 413 406 123

Governor

Governor design. : RQV300...1300MW67-6

Governer no. : 0 420 083 274

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 366 A

1st version kW : 121.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 715 089

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.85)
Rack travel in mm: 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Toterance + - " : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 8.8...9.0

100 s: (8.6...9.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 5.6...5.8 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450 travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.60...8.80 3rd speed rpm : 500

travel mm : 2.70...3.30 4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm: 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 700

Del.quantity : 88.0...90.0

1000 : (86.0...92.0)

Spread cm3 : 3.50 1000 : (6.00)

.....

RATED SPEED

1st version Control lever position degrees: 116...124 Setting point: Speed : 1350 rpm Rack travel in mm: 16.5 Testing: 1st rack travel in: 9.50 rom : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1415...1445 Speed 4th rack travel in: 1550 rpm : 0.0ე...1.00 Speed LOW IDLE 1 Control Lever position degrees: 72...80 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 5.7 Testing: Speed TOTE : 200 Minimum rack trave: 7.50 Speed rpm : 300 Rack trave! in mm : 5.60...5.80 TORQUE CONTROL Dimension a mm : 0.80 Torque control curve - 1st version rpm : 1300 1st speed Rack travel in m: 10.50...10.60 2nd speed rpm : 850 Rack travel in m: 11.20...11.40 rd speed rpm : 1100 Rack travel in m: 10.70...10.90 3rd speed Aneroid/Altitude Compensator Test 1st version Settina Speed : 500 rpm Pressure hPa : : 9.20...9.30 Rack travel mm Measurement Speed 1/min: 500 1st pressure hPa : 300 Rack travel in m: 9.70...9.90 2nd pressure hPa : 400 Rack travel in m: 10.50...10.70 3rd pressure hPa : 700 Rack travel in m: 11.20...11.40 START CUT-OUT

Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed : 850 man. Del.quantity cm3/: 88.0...91.0 1000 s: (85.5...93.5) cm3 : 5.00 Spread 1000 s: (7.00) Aneroid pressure h: -Aneroid pressure h: rpm : 500 Del.quantity cm3/: 49.0...51.0 1000 s: (47.0...53.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.50 Speed rpm : 1340...1350 STARTING FUEL DELIVERY Speed mai : 100 Del.quantity cm3/: 80.0...90.0 1000 s: (77.0...93.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3 : 3.50 1000 s: (5.50) Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 30...32 Note remarks Prestroke mm : 3.00...3.10 : (2.95...3.15) Test sheet : MWM 6,2 F Rack travel in mm : 13.50...0.00 Edition : 21.09.92 Firing order : 1-5-3-6-2-4 Replaces : MWM 6,2 Test oil : ISO-4113 Combination no. : 0 403 446 309 Phasing : 0-60-120-180-240-300 Phasing Injection pump Tolerance + - * : 0.50 (0.75) Pump designation : PES6MW100/320RS1227 EP type number : 0 413 406 215 BASIC SETTING Governor Governor design. : RQV325...1300MW126 1st speed rpm : 1000Governer no. : 0 420 083 279 Rack travel in mm : 13.10...13.20 Cust. part no. : 1249951 Del.quantity cm3/: 10.8...11.0 Customer-spec. information 100 s: (10.6...11.2) Customer : DAF Engine : NS156L Spread cm3 : 0.31st version kW : 156.0 100 s: (0.6) Rated speed : 2600 rpm : 325.0 2nd speed TEST BENCH REQUIREMENTS Rack travel in mm: 4.4...4.6 Del.quantity cm3/: 0.7...1.1 Test oil 100 s: (0.4...1.3) inlet temp. °C : 38...42 Spread cm3 : 0.3100 s: (0.5) Overflow valve : 1 419 992 198 (B) Setting of injection pump with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL Test nozzle holder 1st speed rpm : 1350 assembly : 1 688 901 101 : 8.40...8.80 travel mm : 875 2nd speed LDW. Openina | : 4.90...5.10 travel mm : 207...210 pressure, bar : 500 3rd speed rpm travel mm : 2.70...3.30 Orifice plate : 325 4th speed rpm diameter mm : 0.6 : 1.50...1.90 travel mm FULL LOAD DELIV. AT FULL LOAD STOP Test lines : 1 680 750 008 1st version Outside diameter Speed rpm : 1000 x Wall thickness Aneroid pressure h: 1000 x Length mm : 6.00x2.00x600 Del.quantity : 108.5...110.5 1000 : (106.5...112.5) (A) Injection pump setting values : 3.50 Spread Cm3 Insp. values in parentheses 1000 : (6.00) Set equal delivery quant. per values RATED SPEED

1st version

BEGINNING OF DELIVERY

Control lever position degrees: 119...127 Testing: 1st rack travel in: 12.10 rpm : 1330...1340 Speed 2nd rack travel in: 4.00 Speed rpm : 1455...1485 4th rack travel in: 1550 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 78...86 Setting point w/out bumper spring rpm : 325 Rack travel in mm: 4.5 Testing: Speed rpm : 150 Minimum rack trave: 7.00 rpm : 325 Rack travel in mm : 4.40...4.60 Aneroid/Altitude Compensator Test 1st version Setting : 600 Sceed COM Pressure hPa : 1000 Rack travel mm : 13.10...13.20 Measurement Speed 1/min: 690 1st pressure hPa : 500 Rack travel in m: 12.50...12.60 2nd pressure hPa : 290 Rack travel in m: 11.10...11.40 3rd pressure hPa : -Rack travel in m: 10.30...10.50 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm : 1300 Del.quantity cm3/ : 103.0...106.0 1000 s: (100.5...108.5) Spread cm3 : 5.00

1000 s: (7.00)

1000 s: (61.0...67.0)

rpm : 600 Del.quantity cm3/: 63.0...65.0

Aneroid pressure h: -

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.10

rpm : 1330...1340 Speed

LOW IDLE

Speed rpm : 325

Rack travel in mm : 4.40...4.60 Del.quantity cm3/: 7.0...11.0

1000 s: (4.5...13.5)

•

cm3 : 3.50 Spread 1000 s: (5.50)

Remarks:

Speed

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MMM 6,2 F
Edition : 21.09.92
Replaces : 04.92
Test oil : ISO-4113

Combination no. : 0 403 456 120

Injection pump

Pump designation : PES6MW100/321RS1210

EP type number : 0 413 406 201

Governor

Governor design: : RQ250/1050MW84-11 Governor no: : 0 420 082 066

Cust. part no. : 3-7220

Customer spec. information Customer : MAN

Engine : D 0826 LUH 06

1st version kW : 184.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening .

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values _____

BEGINNING OF DELIVERY Test pressure, bar: 30...32 Prestroke mm : 3.50...3.60 : (3.45...3.65) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ}$: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 800

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 16.1...16.3

100 s: (15.8...16.6)

Spread cm3: 0.4

100 s: (0.7)

2nd speed rpm : 250.0
Rack travel in mm : 5.0...5.2
Del.quantity cm3/: 1.3...1.7

100 s: (1.0...1.9) cm3 : 0.3

Spread cm3 : 0.3 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 800 Aneroid pressure h: 1100

Del.quantity : 161.0...163.0 1000 : (158.0...166.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00

rpm : 1075...1090 Speed 2nd rack travel in: 4.00 rom : 1130...1160 Speed 4th rack travel in: 1250 rom : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 76...34 Setting point w/out bumper spring rpm : 250 Rack travel in mm: 5.1 Testina: rpm : 100 Speed Minimum rack trave: 6.50 Speed rpm : 250 Rack travel in mm : 5.00...5.20 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 800 Rack travel in m: 14.00...14.10 2nd speed rpm : 600 Rack travel in m: 14.00...14.10 3rd speed rpm : 1050 Rack travel in m: 14.00...14.10 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed man Pressure hPa : -Rack travel mm : 9.40...9.50 Measurement 1/min: 500 Speed 1st pressure hPa : 150 Rack travel in m: 9.70...9.80 2nd pressure hPa : 700 Rack travel in m: 13.20...13.50 3rd pressure hPa : 1100 Rack travel in m: 14.00...14.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 rpm : 600 Del.quantity cm3/: 161.0...165.0 1000 s: (158.0...168.0) Spread cm3 : 6.001000 s: (9.00) Aneroid pressure h: 1100

rpm : 1050

LOW IDLE

Remarks:

J04

Speed

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.60...3.70 : (3.55...3.75) Rack travel in mm : 15.00...0.00 Firing order : 1-5-3-6-2-4 Note remarks Test sheet : MWM 6,2 F Edition : 21.09.92 : 04.92 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 456 121 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation: PES6MW100/321RS1186 EP type number : 0 413 406 168 BASIC SETTING Governor Governor design. : RQ250/1200MW84-12 rpm: 800 1st speed : 0 420 082 067 Governer no. Rack travel in mm : 14.80...14.90 Cust. part no. : 3-7221 Del.quantity cm3/: 12.6...12.8 Customer-spec. information Customer : MAN 100 s: (12.4...13.0) Engine : D 0826 LUH03 Spread cm3 : 0.41st version kW : 157.0 100 s: (0.7) Rated speed : 2400 2nd speed rpm : 250.0 Rack travel in mm: 5.9...6.1 TEST BENCH REQUIREMENTS Del quantity cm3/: 1.9...2.3 Test oil 100 s: (1.6...2.5) inlet temp. °C : 38...42 cm3 : 0.3Spread 100 s: (0.5) Overflow valve : 1 419 992 198 GUIDE SLEEVE POSITION Control-lever position Inlet press., bar: 1.50 Degree: -2 Speed rpm : 600 Test nozzle holder Rack travel in mm : 14.70...16.30 assembly : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP Openina pressure, bar : 172...175 1st version Speed rpm : 800 Aneroid pressure h: 1000 Test lines : 1 680 750 008 : 126.0...128.0 Del.quantity 1000 : (124.0...130.0) Outside diameter Spread cm3 : 4.00 x Wall thickness 1000 : (7.50) x Length mm : 6.00X2.00X600 RATED SPEED (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant.

Setting point:

Speed rpm : 600 Rack travel in mm : 15.5

Testing:

1st rack travel in: 13.30

J05

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 1245...1260 Speed man 2nd rack travel in: 4.00 Speed rom : 1290...1320 4th rack travel in: 1400 rom : 0.00...1.50Speed LOW IDLE 1 Control Lever position degrees: 73...81 Setting point w/out bumper spring rpm : 250 Speed Rack travel in mm: 6.0 Testing: Speed : 100 CAT Minimum rack trave: 7.50 rpm : 250 Rack travel in mm : 5.90...6.10 TORQUE CONTROL Dimension a mm : 0.50 Torque control curve - 1st version : 800 1st speed rpm Rack travel in m: 14.80...14.90 2nd speed : 600 CDM Rack travel in m: 14.80...14.90 3rd speed : 1000 rom Rack travel in m: 14.50...14.70 4th speed rpm : 1200 Rack travel in m: 14.30...14.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rom Pressure hPa : -Rack travel mm : 12.30...12.40 Measurement 1/min: 500 Speed 1st pressure hPa : 200 Rack travel in m: 12.70...12.80 2nd pressure hPa : 400 Rack travel in m: 13.80...14.10 3rd pressure hPa : 1000 Rack travel in m: 14.80...14.90 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm : 600 Del.quantity cm3/: 126.0...130.0 1000 s: (123.0...133.0)

Spread cm3 : 6.00 1000 s: (9.00) Aneroid pressure h: 1000 Speed rpm : 1000 Del.quantity cm3/ : 126.0...130.0 1000 s: (123.0...133.0) Speed rpm : 1200 Del.quantity cm3/ : 122.0...126.0 1000 s: (119.0...129.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 74.0...76.0 1000 s: (72.0...78.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.30 Speed rpm : 1245...1260

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 60.0...80.0 1000 s: (57.0...83.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.90...6.10
Del.quantity cm3/: 19.0...23.0
1000 s: (16.5...25.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Note remarks

Test sheet : CUM 8,3 a 5 Edition : 21.09.92 Replaces : 07.87

Test oil : ISO-4113

Combination no. : 9 400 083 454

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...900A7c2209-

1R

: 9 420 083 232 Governer no.

Customer-spec. information Customer : CLIMMINS

Engine : 6 CT 8.3

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6- 2Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 3.00...4.00

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 12.9...13.0

100 s: (12.7...13.2)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 400.0 2nd speed

Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 1.6...2.0

100 s: (1.4...2.3)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 5.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

: 129.0...130.0 Del.quantity

1000 : (127.0...132.0) : 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 104...112

Testing:

1st rack travel in: 11.70 rpm : 943...948 Speed 2nd rack travel in: 4.00 rpm : 977...986 Speed 4th rack travel in: 1100 Speed rpm : 0.30...1.70

LOW IDLE 1 Control lever

position degrees: 74...82 Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 5.5

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 400 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00

Speed rom : 415...475

TORQUE CONTROL

Torque control curve - 1st version

rpm : 900 1st speed

Rack travel in m: 12.70...12.80

2nd speed rpm : 550

Rack travel in m: 12.70...12.90

5th speed rpm : 400

Rack travel in m: 14.00...14.60

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.70 Speed rom : 943...948

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...149.0

1000 s: (132.0...152.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

: 400 Speed morn Rack travel in mm : 5.90...6.10

Del.quantity cm3/: 16.5...20.5 1000 s: (14.0...23.0)

cm3 : 3.50

1000 s: (5.50)

Remarks:

Spread

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

APPLICATION

Generator

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Note remarks

Test sheet : CUM

: 21,09,92 Edition

Replaces

Test oil : ISO-4113

: 9 400 083 454DF Combination no.

Injection pump

Pump designation: PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...900A7C2209-

1R

: 9 420 083 232 Governer no.

Customer-spec. information Customer : CUMMINS

: 6 CT 8.3 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00 & maximum rack tra: 21.00

Difference * CS : 3.00...4.00

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 11.10...11.20

Del.guantity cm3/: 10.1...10.2

100 s: (9.9...10.4)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 400.02nd speed

Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.6...2.0

100 s: (1.4...2.3)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 5.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

: 101.0...102.0 Del.quantity

1000 : (99.0...104.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 103...111

Testing:

1st rack travel in: 10.10 Speed rpm: 943...948 2nd rack travel in: 4.00 Speed rpm : 970...979 4th rack travel in: 1150 Speed rpm : 0.30...1.70

LOW IDLE 1 Control Lever

position degrees: 74...82 Setting point w/out bumper spring

Speed rpm : 400 Rack travel in mm: 5.5

Testing:

Speed : 100 **CDM** Minimum rack trave: 19.00 Speed : 400 MON

Rack travel in mm : 5.90...6.10

Rack travel in mm: 2.00 Speed rpm : 415...475

TORQUE CONTROL

Torque control curve - 1st version rpm : 900 1st speed

Rack travel in m: 11.10...11.20

2nd speed rpm : 550 Rack travel in m: 11.10...11.30

5th speed rpm : 400

Rack travel in m: 12.30...12.90

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10 Speed : 943...948 ממח

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...149.0

1000 s: (132.0...152.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 16.5...20.5 1000 s: (14.0...23.0) cm3 : 3.50 1000 s: (5.50)

Spread

Remarks:

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

APPLICATION

Generator

J10

Note remarks

Test sheet : CUM

Edition : 21.09.92

Replaces : -

Test oil : ISO-4113

Combination no. : 9 400 083 454DG

Injection pump

Pump designation : PES6A1000320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...900A7C2209-

1R

Governer no. : 9 420 083 232

Customer-spec. information Customer : CUMMINS

Engine : 6 CT 8.3

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening .

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference * CS : 3.00...4.00

BASIC SETTING

1st speed rpm: 900

Rack travel in mm: 12.70...12.80

Del.quantity cm3/: 12.9...13.0

100 s: (12.7...13.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0 Rack travel in mm : 5.9...6.1

Del.quantity cm3/: 1.6...2.0

100 s: (1.4...2.3)

Spread cm3 : 0.3 100 s: (0.5)

(00 3) (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 5.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 900

Del.quantity : 129.0...130.0

1000 : (127.0...132.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 104...112

Testing:

1st rack travel in: 11.70 rpm : 943...948 Speed 2nd rack travel in: 4.00 rpm : 977...986 Speed 4th rack travel in: 1100 Speed rom : 0.30...1.70

LOW IDLE 1 Control Lever

position degrees: 74...82 Setting point w/out bumper spring rpm : 400 Rack travel in mm : 5.5

Testing:

Speed ripm : 100 Minimum rack trave: 19.00 rpm : 400 Speed

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00 Speed : 415...475 וווסרו

TORQUE CONTROL

Torque control curve - 1st version

rpm : 900 1st speed

Rack travel in m: 12.70...12.80

2nd speed

nd speed rpm : 550 Rack travel in m: 12.70...12.90

5th speed rpm : 400

Rack travel in m: 14.00...14.60

BREAKAWAY

ist version 1mm rack travel less than

full load rack tr: 11.70 Speed rom : 943...948

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 135.0...149.0

1000 s: (132.0...152.0)

Rack travel in mm: 19.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 16.5...20.5 1000 s: (14.0...23.0) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

APPLICATION

Generator

J12

Note remarks

Test sheet : CUM 5,9 x Edition : 21.09.92 Replaces : 10.91 Test oil : ISO-4113

: 9 400 083 459 Combination no.

Injection pump

Pump designation : PES6A95D12ORS2822 EP type number : 9 400 084 029

Governor

: RQV350...1250AB1235-Governor design.

: 9 420 080 311 Governer no.

Customer-spec. information Customer : CUMMINS

Engine : 6 BT

: 119.3 ist version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening.

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference * CS : 2.00...3.00

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 8.6...8.8

100 s: (8.4...9.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm: 5.0...5.2 Del.quantity cm3/: 0.6...1.0

100 s: (0.4...1.2)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 13001st speed

: 6.80...6.90 travel mm

rpm : 350 2nd speed

: 1.20...1.70 travel mm

3rd speed rpm : 700

travel mm : 4.00...4.50

4th speed rpm : 1550

travel mm : 8.30...8.80

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1530 Speed

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rom : 1250 Speed Aneroid pressure h: 600

: 86.0...88.0 Del.quantity

1000 : (84.0...90.0)

: 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 107...115

Testing:

1st rack travel in: 11.70

rom : 1310...1320 Speed

2nd rack travel in: 4.00

rpm : 1545...1575 Speed

4th rack travel in: 1750

: 0.00...1.00 Speed rpm

LOW IDLE 1 Control lever

position degrees: 63...71

Testing:

Speed : 100 man Minimum rack trave: 7.00 r;om

Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

: 475...575 Speed COM

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 **PDM** Pressure hPa : 600

Rack travel mm : 12.70...12.80

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.60...11.90 2nd pressure hPa : 320 Rack travel in m: 11.70...11.80 *

3rd pressure hPa : 410

Rack travel in m: 12.30...12.50

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600

; 700 rpm Del.quantity cm3/: 80.0...83.0

1000 s: (77.5...85.5)

Aneroid pressure h: -Speed

rpm : 500 Del.quantity cm3/: 64.0...67.0 1000 s: (62.0...69.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

Speed man : 1310...1320

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 115.0...135.0

1000 s: (110.0...140.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

: 350 rpm

Rack travel in mm : 5.00...5.20

Del.quantity cm3/: 6.0...10.0

1000 s: (4.0...12.0) cm3 : 3.50 1000 s: (5.50)

Spread

Remarks:

Start-of-delivery mark at 10° cam rotation angle after start of delivery,

cylinder 1

* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Test sheet Edition

: CUM : 21.09.92 Replaces : 08.92 Test oil : ISO-4113

Combination no. : 9 400 083 463

Injection pump

Pump designation · PES6A950120RS2834 EP type number : 9 400 084 032

Governor

Governor design. : RSV400...1100A8C2259

-1R

: 9 420 083 261 Governer no.

Customer-spec. information Customer : CUMMINS

Engine : 6BT 5.9 L

1st version kW : 108.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85

: (2.70...2.90)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 firing order

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference * CS : 2.00...3.00

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 8.4...8.6

100 s: (8.2...8.8)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 400.0 Rack travel in mm: 5.0...5.2

Del.quantity cm3/: 0.9...1.3

100 s: (0.7...1.5) Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 84.0...86.0

1000 : (82.0...88.0) : 3.50 Spread

cm3

: (6,00) 1000

RATED SPEED

1st version

Control lever

position degrees: 97...105

Testing:

1st rack travel in: 9.90

Speed rpm: 1140...1150 2nd rack travel in: 4.00

Speed rpm : 1175...1205 4th rack travel in: 1350

rom : 0.30...1.70 Speed

LOW IDLE 1

Control lever

position degrees: 67...75

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm : 4.6

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

rpm : 400 Speed

Rack travel in mm : 5.00...5.20

Rack travel in mm : 2.00

Speed rpm : 490...550

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100
Rack travel in m: 10.90...11.00
2nd speed rpm : 700

Rack travel in m: 11.50...11.60

rpm : 900 3rd speed

Rack travel in m: 11.20...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700 Del.quantity cm3/ : 92.5...94.5 1000 s: (90.5...96.5)

Speed rpm : 900

Del.quantity cm3/: 84.5...87.5

1000 s: (82.5...89.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

: 100 Speed rom

Del.quantity cm3/: 115.0...135.0

1000 s: (112.0...138.0) Rack travel in mm: 19.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.00...5.20

Del.quantity cm3/: 9.0...13.0

1000 s: (7.0...15.0) Spread

cm3 : 3.50 1000 s: (5,50)

Remarks:

APPLICATION : C.D.C # 3355079

Tractor (tractor engines)

Note remarks

Test sheet : MMM 3,9 b 1 Edition : 21.09.92 : 08.92 Replaces Test oil : ISO-4113

Combination no. : 9 400 085 243

Injection pump

Pump designation: FES4A80D320RS1282-1 EP type number : 9 400 083 097

Governor

Governor design. : RS350/1500A2B2073-2R

Governer no. : 9 420 083 194

Customer spec, information Customer : MUM

Engine : D 229-4

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.65...2.75

: (2.60...2.80) Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2 Phasing : 0-90-180-270

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference * CS : 4.00...5.00

BASIC SETTING

1st speed rpm: 1500

Rack travel in mm : 9.20...9.30

Del.quantity cm3/ : 5.8...5.9

100 s: (5.6...6.0)

Spread cm3 : 0.2

100 s: (0.4)

rpm : 350.0 2nd speed Rack travel in mm: 6.0...6.2

Del.quantity cm3/: 0.7...1.1

100 s: (0.5...1.2)

Spread cm3 : 0.2100 s: (0.3)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...1.00

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1500 Speed

: 58.0...59.0 Del.quantity

1000 : (56.5...60.5)

Spread cm3: 2.50

1000 : (4,00)

RATED SPEED

1st version

Control lever

position degrees: 60...68

Testina:

1st rack travel in: 8.20

rpm : 1540...1550 Speed 2nd rack travel in: 4.00 rpm : 1585...1615 Speed 4th rack travel in: 1700 Speed rom : 0.30...1.70LOW IDLE 1 Control lever position degrees: 28...36 Setting point w/out bumper spring rpm : 350 Speed Rack travel in mm: 6.1 Testing: Speed rpm : 250 Minimum rack trave: 6.80 rpm : 350 Rack travel in mm : 6.00...6.20 Rack travel in mm: 4.00 rpm : 430...490 rpm : 550 Speed Speed Maximum rack trave: 3.20 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1500 Rack travel in m: 9.20...9.30 2nd speed rpm : 500 Rack travel in m: 10.60...10.70 3rd speed rpm : 900 Rack travel in m: 10.20...10.40 4th speed rpm : 1200 Rack travel in m: 9.50...9.80 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/ : 58.5...60.5 1000 s: (56.5...62.5) Speed rpm : 900 Del.quantity cm3/: 63.0...65.0 1000 s: (61.0...67.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.20 Speed rpm : 1540...1550 STARTING FUEL DELIVERY rpm : 100

Remarks:

Rack travel in mm : 19.00...21.00

BOSCH INJ. PUMP TEST SPECIFICATIONS
Note remarks

Test sheet : MB 6,0 g
Edition : 21.09.92
Replaces : 08.89
Test oil : ISO-4113

Combination no. : 9 400 085 305

Injection pump

Pump designation : PES6A95D410RS2772 EP type number : 9 400 084 018

Governor

Governor design. : RQV300...1300AB1066-

6L

Governor no. : 9 420 080 265

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 366 A

1st version kW : 125.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 8.9...9.1

100 s: (8.7...9.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 6.9...7.1 Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.6)

Spread cm3 : 0.3 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30 2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 700

Del.quantity : 89.0...91.0 1000 : (87.0...93.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever position degrees: 104...112 Testing: ist rack travel in: 9.40 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1460...1490 Speed 4th rack travel in: 1630 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 64...72 Testina: Speed nom : 100 Minimum rack trave: 8.00 rpm : 300 Rack travel in mm : 6.90...7.10 TORQUE CONTROL Dimension a mm : 0.50 Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 10.40...10.50 2nd speed rpm : 800 Rack travel in m: 10.90...11.00 rpm : 1000 4th speed Rack travel in m: 10.60...10.80 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 Pressure hPa : 700 Rack travel mm : 10.90...11.00 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 9.50...9.70 2nd pressure hPa : 450 Rack travel in m: 10.50...10.60 3rd pressure hPa : 300 Rack travel in m: 9.80...10.00 START CUT-OUT

1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 700 Speed : 800 man Del.quantity cm3/: 86.0...89.0 1000 s: (83.5...91.5) Aneroid pressure h: 700 Speed rpm : 1000 Del.quantity cm3/: 88.0...91.0 1000 s: (85.5...93.5) Aneroid pressure h: rpm : 500 Speed Del.quaratity cm3/ : 59.0...61.0 1000 s: (57.0...63.0) BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.40 Speed : 1340...1350 rom

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 95.0...115.0 1000 s: (--) Rack travel in mm : 14.50...14.70

Remarks:

Speed

Note remarks

Test sheet : MB 6,0 g 2 Edition : 21.09.92

Replaces : 09.91 Test oil : ISO-4113

Combination no. : 9 400 085 310

Injection pump

Pump designation : PES6A950410RS2772 EP type number : 9 400 084 018

Governor

: RQV300...1300AB1066-Governor design.

: 9 420 080 279 Governer no.

Customer-spec, information

Customer : MERCEDES-BENZ

: OM 366 LA Engine

1st version kW : 155.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack trave. in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.08)

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 9.8...10.0

100 s: (9.6...10.2)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.6)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300 : 0.80...1.30 travel mm

2nd speed : 500 man

: 2.30...2.80 : 750 travel mm

3rd speed rom

: 4.10...4.30 travel mm

4th speed

: 1500 nom : 8.50...8.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1500 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 98.0...100.0 1000 : (96.0...102.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 105...113

Testing:

1st rack travel in: 10.10

rpm : 1360...1370 Speed

2nd rack travel in: 4.00

rpm : 1485...1515 Speed

4th rack travel in: 1650

rpm : 0.00...1.00 Spaed

LOW IDLE 1

Control Lever

position degrees: 64...72

Testing:

Speed mom : 100 Minimum rack trave: 8.00 Speed rpm : 300

Rack travel in mm : 6.90...7.10

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 חכרו hPa : 700 Pressure

: 11.10...11.20 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.40...9.70

2nd pressure hPa : 450

Rack travel in m: 10.40...10.50

3rd pressure hPa : 300

Rack travel in m: 9.70...9.90

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm : 700 Speed

Del.quantity cm3/: 86.0...89.0 1000 s: (83.5...91.5)

Aneroid pressure h: -: 500 Speed rpm

Del.quantity cm3/: 59.5...61.5

1000 s: (57.5...63.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

rpm : 1360...1370 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...90.0 1000 s: (-)

:

Rack travel in mm : 13.60...13.80

Remarks:

J22

Note remarks

Test sheet : MB 6,0 g 3 Edition : 21.09.92 Replaces : 10.91

Test oil : ISO-4113

Combination no. : 9 400 085 315

Injection pump

Pump designation : PES6A950410RS2772 EP type number : 9 400 084 018

Governor

: RQV300...1300AB1066-Governor design.

: 9 420 080 282 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 366 A

1st version kW : 125.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

rpm : 13001st speed

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 8.9...9.1

100 s: (8.7...9.3)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm : 6.9...7.1 Del.quantity cm3/: 0.9...1.5

100 s: (0.7...1.7)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 0.80...1.30 travel mm 2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed 750 : 750

travel mm : 4.10...4.30

rpm : 1500 4th speed

travel mm : 8.50...8.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 800

: 89.0...91.0 Del.quantity 1000 : (87.0...93.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 105...113

Testing:

1st rack travel in: 9.40

rpm : 1360...1370 Speed

2nd rack travel in: 4.00

rom : 1470...1500 Speed

4th rack travel in: 1650

Speed mcm : 0.00...7.00

LOW IDLE 1 Control Lever

position degrees: 64...72

Testina:

Speed : 100 rom Minimum rack trave: 8.00

rpm : 300 Rack travel in mm : 6.90...7.10

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

rpm : 1300 1st speed

Rack travel in n: 10.40...10.50

rpm : 800 2nd speed

Rack travel in m: 10.90...11.00

4th speed rpm : 1000

Rack travel in m: 10.60...10.80

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm Pressure hPa : 800

: 10.90...11.00 Rack travel mm

Measurement

1/min : 500Speed

1st pressure hPa : -

Rack travel in m: 9.00...9.30

2nd pressure hPa : 460

Rack travel in m: 10.10...10.20

3rd pressure hPa : 300

Rack travel in m: 10.40...10.60

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800 : 800 Speed rpm

Del.quantity cm3/: 86.0...89.0 1000 s: (83.5...91.5)

Aneroid pressure h: 800

Speed rpm : 1000 Del.quantity cm3/ : 88.0...91.0 1000 s: (85.5...93.5)

Aneroid pressure h: -

rpm : 500 Speed

Del.quaritity cm3/: 50.0...52.0

1000 s: (48.0...54.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

rpm : 1360...1370 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 78.0...90.0 1000 s: (-)

Rack travel in mm : 13.60...13.80

Remarks:

Note remarks

: MB 6,0 g 4 : 21.09.92 Test sheet Edition

Replaces : 08.91 Test oil : ISO-4113

Combination no. : 9 400 085 317

Injection pump

Pump designation : PES6A95D41ORS2772 : 9 400 084 018 EP type number

Governor

Governor design. : RQV300...1300AB1066-

Governer no. : 9 420 080 282

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M 365 A

: 125.0 1st version kW Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3,35)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 8.9...9.1

100 s: (8.7...9.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed npm : 300.0Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 0.9...1.5

100 s: (0.7...1.7)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300 travel mm : 0.80...1.30

2nd speed rpm : 500

: 2.30...2.80 travel mm

3rd speed : 750 rpm travel mm : 4.10...4.30

4th speed 1500

rpm : 8.50...8.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 800

Del.quantity : 89.0...91.0 1000 : (87.0...93.0)

Spread : 3.50 cm3

1000 : (6.00)

RATED SPEED

1st version Control lever position degrees: 105...113 Testina: 1st rack travel in: 9.40 rpm : 1360...1370 Speed 2nd rack travel in: 4.00 rpm : 1470...1500 Speed 4th rack travel in: 1650 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 64...72 Testina: rpm : 100 Speed Minimum rack trave: 8.00 rpm : 300 Speed Rack travel in mm : 6.90...7.10 TORQUE CONTROL Dimension a mm : 0.50 Torque control curve - 1st version rpm : 1300 1st speed Rack travel in m: 10.40...10.50 2nd speed rpm : 800 Rack travel in m: 10.90...11.00 th speed rpm : 1000 Rack travel in m: 10.60...10.80 4th speed rpm Aneroid/Altitude Compensator Test 1st version Setting Speed rom : 500 hPa : 800 Pressure Rack travel mm : 10.90...11.00 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 9.00...9.30 2nd pressure hPa : 460 Rack travel in m: 10.10...10.20

3rd pressure hPa : 300

Rack travel in m: 9.40...9.60

1st version Aneroid pressure h: 800 rpm : 800 Speed Del.quantity cm3/: 86.0...89.0 1000 s: (83.5...91.5) Aneroid pressure h: 700 : 1000 Speed rpm Del.quantity cm3/: 88.0...91.0 1000 s: (85.5...93.5) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 50.0...52.0 1000 s: (48.0...54.0) BREAKAWAY 1st version 1mm rack travel less than

STARTING FUEL DELIVERY

full load rack tr: 9.40

Speed rpm : 100 Del.quantity cm3/ : 78.0...90.0 1000 s: (-) Rack travel in mm : 13.60...13.80

rpm : 1360...1370

Remarks:

Speed

Speed

START CUT-OUT

1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : MB 6,1 h
Edition : 21.09.92
Replaces : 04.91
Test oil : ISO-4113

Combination no. : 9 400 085 340

Injection pump

Pump designation : PES6A95D410RS2795 EP type number : 9 400 084 020

Governor

Governor design. : RSV350...1250A0B1150

-5L

Governer no. : 9 420 083 249

Customer-spec. information

Customer : MERCEDES-BENZ

Engine: 0M 366

1st version kW : 94.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 8.60...8.70

Del.quantity cm3/: 6.2...6.4

100 s: (6.0...6.6)

Spread cm3: 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 6.9...7.1 Del.quantity cm3/: 0.9...1.5

100 s: (0.7...1.7)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...1.00

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1250

Del.quantity : 62.5...64.5 (60.5...66.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 105...114

Testing:

1st rack travel in: 7.60

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1332...1362

4th rack travel in: 1500

: 0.30...1.70 Speed MON

LOW IDLE 1 Control lever

position degrees: 78...86 Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm: 6.5

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 : 350 MOM

Rack travel in mm : 6.90...7.10

Rack travel in mm: 2.00 Speed rpm : 445...505

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 8.60...8.70

2nd speed rpm : 500

Rack travel in m: 8.60...8.80

5th speed rpm : 400

Rack travel in m: 9.80...10.40

EREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 7.60

Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 90.0...110.0 1000 s: (87.0...113.0)

Rack travel in mm : 14.10...14.30

LOW IDLE

rpm : 350

Rack travel in mm : 6.90...7.10 Del.quantity cm3/: 9.0...15.0 1000 s: (7.0...17.0) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet Edition : 21.09.92 Replaces : 08.92 Test oil : ISO-4113 Combination no. : 9 400 085 351 Injection pump Pump designation : PES6A95D41DRS2772 : 9 400 084 018 EP type number Governor : RQV300...1300AB1066-Governor design. 13L Governer no. : 9 420 080 332 Customer-spec. information Customer : MERCEDES-BENZ : OM 366 LA Engine 1st version kW : 147.0 Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Openina . pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

> : 3.20...3.30 : (3.15...3.35)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - * : 0.50 (0.08) BASIC SETTING 1st speed rom : 1300Rack travel in mm : 11.10...11.20 Del.quantity cm3/: 9.7...9.9 100 s: (9.5...10.1) cm3 : 0.3Spread 100 s: (0.6) rpm : 300.0 2nd speed Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 0.8...1.4 100 s: (0.6...1.6) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 300 travel mm : 0.80...1.30 2nd speed rpm : 500 2.30...2.80 travel mm : 750 3rd speed rpm : 4.10...4.30 travel mm : 1500 4th speed rpm travel mm : 8.50...8.60 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1500 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1300 Aneroid pressure h: 700 : 97.0...99.0 Del.quantity 1000 : (95.0...101.0) Spread : 3.50 cm3 1000 : (6.00)

RATED SPEED

Prestroke mm

1st version Control lever

position degrees: 106...114

Testing:

1st rack travel in: 10.10

Speed rpm : 1360...1370 2nd rack travel in: 4.00

rpm : 1490...1520 Speed

4th rack travel in: 1650

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 62...70

Testing:

rpm Speed : 100 Minimum rack trave: 8.00 rpm : 300

Rack travel in mm : 6.90...7.10

CONSTANT REGULATION

rpm : 420...550 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 hPa : 700 Pressure

Rack travel mm : 11.10...11.20

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 9.40...9.70

2nd pressure hPa : 500

Rack travel in m: 10.40...10.50

3rd pressure hPa : 350

Rack travel in m: 9.80...10.00

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm: 700 Del.quantity cm3/: 84.0...87.0

1000 s: (81.5...89.5)

Aneroid pressure h: -

Speed rom : 500 1000 s: (57.0...63.0)

Del.quantity cm3/: 59.0...61.0

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1360...1370

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 85.0...97.0 1000 s: (-)

Rack travel in mm : 13.40...13.60

Remarks:

K02

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : 21.09.92 Edition Replaces Test oil : ISO-4113 Combination no. : 9 400 085 353 Injection pump Pumo designation : PES6A95D41ORS2772 EP type number : 9 400 084 018 Governor : RQV300...1300AB1066-Governor design. : 9 420 080 279 Governer no. Customer-spec, information Customer : MERCEDES-BENZ Engine : 0M 366 LA : 155.0 1st version kW Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. *C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly **Opening** pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1,50x600 (A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 3.20...3.30 : (3.15...3.35) **KO3**

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - * : 0.50 (0.08) BASIC SETTING 1st speed rpm: 1300 Rack travel in mm : 11.10...11.20 Del.quantity cm3/: 9.8...10.0 100 s: (9.6...10.2) Spread cm3 : 0.3100 s: (0.6) rpm : 300.02nd speed Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 0.8...1.4 100 s: (0.6...1.6) Spread cm3 : 0.3100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 300 : 0.80...1.30 travel mm rpm : 500 2nd speed : 2.30...2.80 travel mm : 750 3rd speed rpm : 4.10...4.30 travel mm : 1500 4th speed rom : 8,50,...8,60 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1500 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1300 Aneroid pressure h: 700 Del.quantity : 98.0...100.0 1000 : (96.0...102.0) : 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 104...112

Testing:

1st rack travel in: 10.10

Speed rpm : 1360...1370

2nd rack travel in: 4.00

rom : 1485...1515 Speed

4th rack travel in: 1650

Speed rom : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 64...72

Testing:

: 100 Speed mqn. Minimum rack trave: 8.00 Speed rpm : 300

Rack travel in mm : 6.90...7.10

Aneroid/Altitude Compensator Test

1st version Setting

rpm Speed Pressure

: 500 hPa : 700

: 11.10...11.20 Rack travel mm

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.40...9.70

2nd pressure hPa : 450

Rack travel in m: 10.40...10.50

3rd pressure hPa : 300

Rack travel in m: 9.70...9.90

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm: 700 Del.quantity cm3/: 86.0...89.0

1000 s: (83.5...91.5)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 59.5...61.5

1000 s: (57.5...63.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1360...1370

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...90.0 1000 s: (-)

Rack travel in mm : 13.60...13.80

Remarks:

K04

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: VOL 10,0q15 : 21.09.92 Test sheet Edition

Replaces : 08.91

Test oil : ISO-4113

: 9 400 087 437 Combination no.

Injection pump

Pump designation : PE6P110A320RS3103Y EP type number : 0 411 816 729

Governor

Governor design. : RQV250...1100PA589-3

: 9 420 080 288 Governer no.

Customer-spec. information Customer : VOLVO

Engine : THD 100 EC

1st version kW : 180.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 13.8...14.0

100 s: (13.5...14.3)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm: 5.2...5.4 Del.quantity cm3/: 3.0...3.4 100 s: (2.7...3.6)

Spread cm3 : 0.3100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 1.10...1.30 travel mm

2nd speed rpm : 500

4.10...4.90 travel mm

rpm : 700 3rd speed

travel mm : 6.30...6.70

4th speed rpm : 950

travel mm : 6.30...6.70

5th speed : 1100 rpm

: 7.00...7.50 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1175

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 900

Del.quantity : 750.0...143.0)

Spread cm3: 4.00

1000 : (7.50)

RATED SPEED

1st version Control Lever

position degrees: 61...69

Testing:

1st rack travel in: 10.10

Speed rpm : 1160...1170

2nd rack travel in: 4.00

rpm : 1225...1255 Speed

4th rack travel in: 1350

Speed rom : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 8...16

Testina:

Speed rpm : 100 Minimum rack trave: 6.70 rpm

Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

: 250...425 Speed וחכרו

Aneroid/Altitude Compensator Test

1st version

Settina

Speed LDW. : 500 hPa : 900 Pressure

: 11.10...11.20 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.60...9.80

2nd pressure hPa : 280

Rack travel in m: 9.80...9.90

3rd pressure hPa : 430

Rack travel in m: 10.90..11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 700 Speed

Del.quantity cm3/: 106.0...108.0

1000 s: (103.0...111.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed L'DU

Del.quantity cm3/: 170.0...200.0 1000 s: (166.0...204.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.20...5.40
Del.quantity cm3/: 30.0...34.0

1000 s: (27.5...36.5)

cm3 : 3.00 Spread

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

APPLICATION

Omnibus

BOSCH INJ. FUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0q16 Edition : 21.09.92 Replaces : 10.90

Test oil : ISO-4113

Combination no. : 9 400 087 438

Injection pump

Pump designation : PE6P110A320RS3108X

EP type number : 0 411 816 730

Governor

Governor design. : RQV250...1100PA589-3

Governer no. : 9 420 080 288

Customer-spec. information Customer : VOLVO

Engine : THD100 FD

: 203.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 16.0...16.2

100 s: (15.7...16.5)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 3.0...3.4 100 s: (2.7...3.6)

Spread cm3 : 0.3100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rom : 250 : 1.10...1.30 travel mm rpm : 500 2nd speed

: 4.10...4.90 travel mm

3rd speed rpm : 700 : 6.30...6.70 travel mm

4th speed rpm : 950

travel mm : 6.30...6.70

5th speed rpm : 1100

: 7.00...7.50 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1175 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 900

Del.quantity : 100.0...165.0)

Spread cm3

: 4.00 1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 61...69

Testing:

1st rack travel in: 11.10

Speed rom : 1160...1170 2nd rack travel in: 4.00

rpm : 1225...1255 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 8...16

Testing:

Speed rpm : 100 Minimum rack trave: 6.70 rpm : 250

Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

rom : 250...425 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm: hPa : 900 Pressure

Rack travel mm : 12.10...12.20

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 9.30...9.40

2nd pressure hPa : 280

Rack travel in m: 9.50...9.60

3rd pressure hPa : 700

Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/: 106.0...108.0

1000 s: (103.0...111.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.10

rom : 1160...1170 Speed

STARTING FUEL DELIVERY

Speed mpm : 100

Del.quantity cm3/: 170.0...200.0

1000 s: (166.0...204.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250

Rack travel in mm : 5.00...5.20 Del.quantity cm3/: 30.0...34.0

1000 s: (27.5...36.5)

Spread cm3 : 3.00

1000 s: (6.00)

Remarks:

Dalivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB

: 21.08.92 Edition

Replaces

Test oil : ISO-4113

Combination no. : 9 400 087 468

Injection pump

Pump designation : PES5P120A720LS7174

EP type number : 0 412 725 806

Governor

Governor design. : RQV300...1050PA1041

Governer no. : 9 420 080 329

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM449 A

1st version kW : 184.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Openina |

pressure, bar : 207...210

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00

: 1-3-5-4-2 Firing order

Phasing : 0-72-144-216-288

Tolerance + - " : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.90...14.10

Del.quantity cm3/: 19.3...19.5

100 s: (19.0...19.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm: 6.6...7.0

Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

1.20...1.60 travel mm

2nd speed rpm : 500

: 3.00...3.50 travel mm

rpm : 900 3rd speed travel mm

: 5.60...6.10 4th speed rpm : 1100

: 7.40...7.90 travel mm

5th speed rpm : 1210 : 9.30...9.80 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 700

Del.quantity : 193.5...195.5

1000 : (190.5...198.5)

k09

cm3: 5.00 Spread : (9.00) 1000 RATED SPEED 1st version Control Lever position degrees: 111...119 Testing: 1st rack travel in: 13.70 Speed rpm : 1090...1100 2nd rack travel in: 4.00 Speed rpm : 1180...1210 4th rack travel in: 1300 Speed rpm : 0.00...1.50LOW IDLE 1 Control lever position degrees: 66...74 Testina: Speed : 100 rom Minimum rack trave: 8.50 Speed : 300 rom. Rack travel in mm : 6.70...6.90 CONSTANT REGULATION Speed : 380...320 rpm Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 mqn Pressure hPa : 700 Rack travel mn : 13.90...14.10 Measurement Speed 1/min : 600 1st pressure hPa : 340 Rack travel in m: 11.60...11.80 2nd pressure hPa : 520 Rack travel in m: 13.00...13.20 3rd pressure hPa : 960 Rack travel in m: 14.10...14.20 4th pressure hPa : 1040 Rack travel in m: 14.30...14.40 5th pressure hPa Rack travel in m: 10.80...11.10 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1300 : 1050 Speed man Del.quantity cm3/: 208.5...211.5 1000 s: (205.5...214.5) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1300 Speed : 750 rpm Del.quantity cm3/: 209.0...213.0 1000 s: (206.0...216.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quaritity cm3/ : 131.0...133.0 1000 s: (128.0...136.0) Spread cm3 : 8.00 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack to: 13.70 Speed rpm : 1090...1100 STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 197.0...217.0 1000 s: (193.0...221.0)

Remarks:

BOSCH INU. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAS 8,3 h 1 : 12.10.92 Edition : 20.6.88 Replaces Test oil : ISO-4113

: 9 400 230 058 Combination no.

Injection pump

Pump designation: PES6A95D32DLS2647

Governor

Governor design. : RSV400...1100A2B2172

-R

Customer-spec. information Customer : CASE

Engine : A 504 BDT

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 9 681 273 009

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test Lines : 9 681 230 706

Outside diameter x Wall thickness

x Length mm : 6,00x2,00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values __

BEGINNING OF DELIVERY

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.60...9.70

Del.quantity cm3/: 10.4...10.6

100 s: (10.2...10.8)

cm3 : 0.35Spread

100 s: (0.60)

2nd speed rpm : 400

Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4)

cm3 : 0.35Spread

100 s: (0.55)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 104.5...106.5 Del.quantity 1000 : (102.5...108.5)

: 3.5 Spread cm3

1000 : (6.0)

RATED SPEED

1st version Control lever

position degrees: 46...54

Testing:

1st rack travel in: 8.60

Speed rpm : 1140...1150 2nd rack travel in: 4.00

Speed rpm : 1185...1215 4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 26...34

Setting point w/out bumper spring

rpm : 400

Rack travel in mm: 4.40

Testing:

rpm : 100 Speed Minimum rack trave: 19.00 Speed rpm : 400

Rack travel in mm : 4.80...5.00

Rack travel in mm : 2.00

Speed rpm : 525...585

TORQUE CONTROL

Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 9.60...9.70

2nd speed rpm : 750

Rack travel in m: 10.25...10.35

3rd speed rpm : 600

Rack travel in m: 10.20...:0.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750 Del.quantity cm3/: 111.5...115.5

1000 s: (109.5...117.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.60

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.00...150.00 1000 s: (137.0...153.0)

Remarks:

: CASE # A-182102

Start-of-delivery mark is at start of

delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : IHC 9,0 d 1 Edition : 12.10.92 : 7.86 Replaces Test oil : ISO-4113 Combination no. : 9 400 230 086 Injection pump Pump designation : PES8A95D32ORS2708 EP type number : 9 410 230 027 Governor Governor design. : RQV325...1400AB1213R Governer no. : 9 420 231 012 Customer-spec. information Customer : IHC Engine : D9L 1st version kW : 123.0 Rated speed : 2800 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 019 Inlet press., bar: 2.80 Test nozzle holder : 0 681 343 009 assembly **Opening** pressure, bar : 172...175 Test lines : 9 681 271 001

Outside diameter x Wall thickness x Length mm : 6,00x2,00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values _ BEGINNING OF DELIVERY Rack travel in mm: 10.50 Firing order: 1-8-7-3-6-5-4-2

: 0-45-90-135-180-225-Phasing 270-315 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1400 Rack travel in mm : 11.00...11.10 Del.quantity cm3/: 6.4...6.6 100 s: (6.2...6.8) Spread cm3 : 0.35100 s: (0.60) rpm : 350 2nd speed Rack travel in mm : 6.70...6.90 Del.quantity cm3/: 0.9...1.3 100 s: (0.6...1.5) cm3 : 0.35Spread 100 s: (0.55) QUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1580 Rack travel in mm: 8.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1400 : 64.0...66.0 Del.quantity 1000 : (62.0...68.0) : 3.5 Spread cm3 1000 : (6.0)RATED SPEED 1st version Control Lever position degrees: 62...70 Testing: 1st rack travel in: 10.00 rpm : 1450...1460 Speed 2nd rack travel in: 4.00 rpm : 1550...1580 Speed 4th rack travel in: 1650 rpm : 0.00...1.00 Speed

position degrees: 7...15

Testina:

Speed rpm : 100 Minimum rack trave: 8.00

Speed rpm : 350
Rack travel in mm : 6.70...6.90
Rack travel in mm : 2.00

Speed : 630...690 rom

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.40...11.60

2nd speed rpm : 1300

Rack travel in m: 11.00...11.10

START CUT-OUT

Speed 1/min : 205...265

FUEL DELIVERY CHARACTERISTICS

1st version

: 840 Speed PDM -

Del.quantity cm3/: 55.0...58.0 1000 s: (52.5...60.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.00

Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 180.0...

1000 s: (175.0...)

Remarks:

: CASE # A-182102

Start-of-delivery mark is at start of

delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 j7 : 12.10.92 : 23.3.90 Edition

Replaces Test oil : ISO-4113

Combination no. : 9 400 231 241

Injection pump

Pump designation : PES6P120A720RS6016-1

Governor

Governor design. : RQV325...850PA721-5K

Cust. part ro.

Customer-spec. information Customer : MACK

: E6 400 4VH Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 0.2

Opening

pressure, bar : 295...305

Test lines : 9 681 230 735

Outside diameter

x Wall thickness

x Length mm : 6.35x1.70x838.2

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Prestroke mm : 2.95...3.05

: (2.90...3.10)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75) Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 18.3...18.5

100 s: (18.0...18.9)

Spread cm3 : 0.5

100 s: (0.75)

rpm : 325 2rid speed

Rack travel in mm : 4.70...4.90 Del.quantity cm3/: 3.0...3.4

100 s: (2.8...3.6)

Spread cm3 : 1.0100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 Speed rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

: 183.0...185.0 Del.quantity 1000 : (180.0...189.0)

: 5.0 cm3

Spread 1000 : (7.5)

RATED SPEED

1st version

Control lever

position degrees: 52...58

Testing:

1st rack travel in: 12.20

rpm : 890...900 Speed 2nd rack travel in: 4.00

: 995...1025 Speed rom

4th rack travel in: 1050

Speed man : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 10...16

Testing:

Speed : 250 rom Minimum rack trave: 6.60 Speed rom : 325

Rack travel in mm : 4.70...4.90 Rack travel in mm : 2.00

rpm : 430...490 Speed

TORQUE CONTROL

Dimension a mm : 0.60

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 13.20...13.30

2nd speed rpm : 700

Rack travel in m: 13.40...13.50

3rd speed rpm : 600

Rack travel in m: 13.80...13.90

4th speed rpm : 500

Rack travel in m: 13.20...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700

Del.quantity cm3/: — 1000 s: (193.5...205.5)

Speed rpm : 600

Del.quantity cm3/: 213.0...219.0 1000 s: (210.0...222.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.20 Speed rpm : 890...900

STARTING FUEL DELIVERY

: 100 Speed rom

Del.quantity cm3/: 160.0...200.0 1000 s: (150.0...210.0)

LOW IDLE

Speed rpm : 325 Del.quantity cm3/ : 30.0...34.0 1000 s: (28.0...36.0)

Remarks:

See VDT-I-MAC 002

PLE dimension = 0.740'' - 0.820''

The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder assembly

Note remarks

Test sheet

: KHD

Edition

: 21.69.92

Replaces

Test oil

: ISO-4113

Combination no.

: 0 401 840 734AC

Injection pump

Pump designation : PE12P110A920LS3173

EP type number

: 0 411 810 708

Governor

Governor design. : RQV300...1075PA746

Governer no.

: 0 421 813 477

Customer

Customer-spec, information : KHD

Engine

: BF12L513

1st version kW

: 270.0

Rated speed

: 2150

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Opening

pressure, bar

: 172...175

Test lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00x1,50x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Prestroke mm

: 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order

: 1- 4- 9- 8- 5- 2-

K17

Phasina

: 0-15-60-75-120-135-

180~195~240~255~300~

315

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1075

Rack travel in mm : 9.80...9.90

Del.quantity cm3/: 10.2...10.6

100 s: (9.9...10.8)

Spread

cm3 : 0.4

100 s: (0.7)

rpm : 300.0 2nd speed

Rack travel in mm: 6.6..6.8 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2)

Spread

cm3 : 0.4100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

travel mm

: 1.30...1.40

2nd speed rpm

380

travel mm 3rd speed rpm

2.30...2.70 : 430

travel mm

2.80...3.30

4th speed mgn

: 700 travel mm : 5.30...5.60

5th speed

: 1120 תוכנים

travel mm

: 8.40...8.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed Del.quantity

Speed

rpm : 1075

: 102.0...106.0

1000 : (99.5...108.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 50...58

Testing:

1st rack travel in: 8.80

rom : 1115...1125 Speed

2nd rack travel in: 5.50

rpm : 1140...1170 Speed

4th rack travel in: 1350

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control Lever

position degrees: 15...23

Testing:

rpm : 100 Speed Minimum rack trave: 8.20

Speed rpm : 300 Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

rpm : 315...465 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 1075

Rack travel in m: 9.80...9.90

2nd speed rpm : 650

Rack travel in m: 9.80...10.00

START CUT-OUT

1/min: 220 (240) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.80 rom : 1115...1125 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...165.0 1000 s: (131.0...169.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

K18

: 0-15-60-75-120-135 -

315

rpm: 1075

Rack travel in mm : 10.40...10.50

cm3 : 0.4

100 s: (0.7)

rpm : 300.0

cm3 : 0.4

100 s: (0.7)

Del.quantity cm3/: 11.3...11.7

Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

: 0.50 (0.75)

100 s: (11.0...11.9)

180-195-240-255-300-

Note remarks

Test sheet : KHD

: 21.09.92 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 840 734AD

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RUV300...1075PA746

Governer no. : 0 421 813 477

Customer-spec. information Customer : KHD

Engine : BF12L513

1st version kW : 294.0 Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Test nozzle holder

: 0 681 343 009 assembly

Openina

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1- 4- 9- 8- 5- 2-Firing order

Inlet press., bar: 1.50

: 172...175 pressure, bar

x Length mm : 6.00x1.50x600

BEGINNING OF DELIVERY

2nd speed 380 rpm : : 2.30...2.70

: 1.30...1.40

rpm : 300

travel mm

3rd speed mpm : 430 : 2.80...3.30 travel mm

rpm : 700 4th speed

: 5.30...5.60 travel mm

5th speed : 1120 rom

: 8,40...8.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1120 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Phasing

Tolerance + - *

BASIC SETTING

1st speed

Spread

2nd speed

Spread

1st speed

travel mm

Time to cyl. no. : 1

Speed rom : 1075

: 113.0...117.0 Del.quantity

1000 : (110.5...119.5)

Spread : 4.00 cm3

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 50...58

Testing:

1st rack travel in: 9.40

Speed rpm: 1115...1125 2nd rack travel in: 5.50

rpm : 1145...1175 Speed

4th rack travel in: 1350

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 15...23

Testing:

Speed : 100 rpm Minimum rack trave: 8.20 Speed : 300 man.

Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

rpm : 315...465 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1075

Rack travel in m: 10.40...10.50

2nd speed : 650 rom

Rack travel in m: 10.40...10.60

START CUT-OUT

1/min: 220 (240) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.40

rpm : 1115...1125 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...165.0

1000 s: (131.0...169.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

K20

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 W39 Edition : 27.10.92 Replaces : 08.10.91 Test oil : ISO-4113

Combination no. : 0 400 075 929

Injection pump

Pump designation: PES5M55C32ORS177 EP type number : 0 410 055 974

Governor

Governor design. : RSF34C/23COM64-18 : 0 420 021 159 Governer no.

Cust. part no. : T4

Customer-spec. information Customer : MB-FKW

Engine : OM602A-USA

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY Test pressure, bar: 30...32

: 1.70...1.80 Prestroke mm

: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1-2-4-5-3

Phasing : 0-72-144-216-288

Tolerance + - * : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

rpm : 10001st speed

Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 5.1...5.2

100 s: (5.0...5.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 315.0 Rack travel in mm : 5.4...5.6

Del.quantity cm3/: 0.5...0.6 100 s: (0.4...0.85)

cm3 : 0.1 Spread

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1850

Del.quantity : 51.0...52.0 1000 : (50.0...53.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control Lever

position degrees: 50...0 3rd rack travel in: 8,5..8,9 Speed rpm : 2500

4th rack travel in: 2950

rpm : 0.00...1.00 Speed

SET IDLE CONTROL LEVER

POSITION

: 1000 LDW Rack travel in mm: 1,7...1,8

LOW IDLE 1 Control lever

position degrees: 812 Setting point w/out bumper spring Speed rpm : 315 Rack travel in mm : 5.5 Testing: Speed rpm : 220 Minimum rack trave: 8.00 Speed rpm : 315 Rack travel in mm : 5.405.60	Del.quantity cm3/: 48.550.5 1000 s: (47.551.5) Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1050 Speed rpm : 1000 Del.quantity cm3/: 33.034.0 1000 s: (32.035.0) Spread cm3 : 2.50 1000 s: (3.00)
Rack travel in mm : 2.50 Speed rpm : 520620 Speed rpm : 1000 Maximum rack trave: 1.80	STARTING FUEL DELIVERY
SET IDLE AUXILIARY SPRING Speed rpm : 380 Rack travel in mm : 4,24,4 : (4,14,5)	Speed rpm : 100 Del.quantity cm3/: 52.00.0 1000 s: (52.00.0) Rack travel in mm : 20.103.00
TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 13.7013.80 2nd speed rpm : 1600 Rack travel in m: 13.0013.20 3rd speed rpm : 2200 Rack travel in m: 12.2012.40 Aneroid/Altitude Compensator Test	HIGH IDLE 1st version Aneroid pressure h: 1850 Speed rpm : 2500 Rack travel in mm : 8.508.90 Det.quantity cm3/: 29.033.0 1000 s: (28.034.0) Spread cm3 : 2.50 1000 s: (3.00)
Compensator rest	LOW IDLE
1st version Setting Speed rpm : 1000 Pressure hPa : 1600 Rack travel mm : 0.300.70	Speed rpm : 315 Rack travel in mm : 5.405.60 Del.quantity cm3/: 5.06.0 1000 s: (4.08.5) Spread cm3 : 1.00 1000 s: (1.50)
Measurement Speed 1/min : 1000	SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)
1st pressure hPa : 1050 Rack travel in m: 3.403.60 2nd pressure hPa : 750 Rack travel in m: 4.905.30 FUEL DELIVERY CHARACTERISTICS	Control lever at idle stop Speed rpm : 340 Rack travel in mm : (12.714.1) Del.quantity cm3/:- 1000 s: (41.049.0) Current A : 1.8
1st version Aneroid pressure h: 1850 Speed rpm : 1600 Del.quantity cm3/: 49.551.0	Control lever at full-load stop Speed rpm : 2950 Rack travel in mm : 0.01.0 Current short-duration A : 3.0 Starting test Speed rpm : 100 Del.quantity cm3/:- min. 1000 s: 52.0 1,8A

Remarks:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
—Control-lever position 35,5°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
—Control-lever position 33.0°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE—Control lever at idle stop. With n = 315 1/min. and pu = 450 mbar, control rod must move quickly to control—rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 16.8°...17.2° (16.7...17.3°) angular displacement of cam following start of delivery of cylinder no. 1.

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY —Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

Testing and adjusting the control-rodtravel sensor with evaluation circuit KDEP-P400

Receiving inspection
Shift control lever to full-load stop.
Set 13.5 V at stabilizer. Apply
1850 hPa to ALDA. Run up to speed of
1000 1/min; a voltage of 2.457...2.517
(2.427...2.547) V must be displayed
on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 21.0...22.0 (20.0...23.0)

ccm/1000 strokes with control lever. Shift control-rod-travel sensor until U = 1.633...1.639 (1.635...1.637) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 2.457... 2.517 V must be attained.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB Edition : 01.09.92 Replaces Test oil : ISO-4113 Combination no. : 0 400 075 929 Injection pump Pump designation : PES5M55C32URS177 EP type number : 0 410 055 974 Governor Governor design. : RSF340/2300M64-18 : 0 420 021 159 Governer no. Cust. part no. : T8 Customer-spec. information : MB-PKW Customer Engine : OM602A-USA ALDA 1st version kW : 92.0 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 469 990 351 Inlet press., bar: 1.00 Test nozzle holder : 1 688 901 111 assembly Opening. pressure, bar : 147...150 Test lines : 1 680 750 014 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____ BEGINNING OF DELIVERY

Rack travel in mm : 20.00...22.00 Firing order : 1-2-4-5-3 Phasing : 0-72-144-216-288 Tolerance + - * : 0.00 (1.00) Time to cyl. no. : 1 BASIC SETTING rpm: 1000 1st speed Rack travel in mm : 13.70...15.80 Del.quantity cm3/: 5.1...5.2 100 s: (5.0...5.3) Spread cm3 : 0.2100 s: (0.3) 2nd speed rpm : 315.0 Rack travel in mm: 5.4...5.6 Del.quantity cm3/: 0.6...0.7 100 s: (0.5...0.9) cm3 : 0.1Spread 100 s: (0.1) FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1000 Speed Aneroid pressure h: 1850 : 51.7...52.7 Del.quantity 1000 : (50.7...53.7) : 2.50 Spread cm3 1000 : (3.00) RATED SPEED 1st version Control lever position degrees: 50...0 3rd rack travel in: 8,5...8,9 rpm : 2500 Speed 4th rack travel in: 2950 : 0.00...1.00 Speed rpm SET IDLE CONTROL LEVER POSITION : 1000 rpm Rack travel in mm: 1,7...1,8 LOW IDLE 1

Control lever

Prestroke mm

Test pressure, bar: 30...32

: 1.70...1.80

: (1.65...1.85)

position degrees: 812 Setting point w/out bumper spring Speed rpm : 315 Rack travel in mm : 5.5 Testing: Speed rpm : 220 Minimum rack trave: 8.00 Speed rpm : 315 Rack travel in mm : 5.405.60 Rack travel in mm : 2.50	Del.quantity cm3/: 48.550.5 1000 s: (47.551.5) Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1050 Speed rpm : 1000 Del.quantity cm3/: 34.035.0 1000 s: (33.036.0) Spread cm3 : 2.50 1000 s: (3.00)
Speed rpm : 520620 Speed rpm : 1000 Maximum rack trave: 1.80	STARTING FUEL DELIVERY
SET IDLE AUXILIARY SPRING Speed rpm : 380 Rack travel in mm : 4,204,40 : (4,104,50)	Speed rpm : 100 Del.quantity cm3/ : 54.00.0 1000 s: (54.00.0) Rack travel in mm : 20.100.00
TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 13.7013.80 2nd speed rpm : 1600 Rack travel in m: 13.0013.20 3rd speed rpm : 2200 Rack travel in m: 12.2012.40 Aneroid/Altitude	#IGH IDLE 1st version Aneroid pressure h: 1850 Speed rpm : 2500 Rack travel in mm : 8.508.90 Del.quantity cm3/: 30.034.0 1000 s: (29.035.0) Spread cm3 : 2.50 1000 s: (3.00)
Compensator Test	LOW IDLE
1st version Setting Speed rpm : 1000 Pressure hPa : 1600 Rack travel mm : 0.300.70	Speed rpm : 315 Rack travel in mm : 5.405.60 Del.quantity cm3/ : 6.07.0 1000 s: (5.09.5) Spread cm3 : 1.00 1000 s: (1.50)
Measurement Speed 1/min: 1000	+ SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)
1st pressure hPa : 1050 Rack travel in m: 3.403.60 2nd pressure hPa : 750 Rack travel in m: 4.905.30 FUEL DELIVERY CHARACTERISTICS	Control lever at idle stop Speed rpm : 340 Rack travel in mm : (12,714,1) Del.quantity cm3/: - 1000 s: (42,550,5) Current A : 1,8
1st version Aneroid pressure h: 1850 Speed rpm : 1600 Del.quantity cm3/: 50.051.5	Control lever at full-load stop Speed rpm : 2950 Rack travel in mm : 0,01,0 Current short-duration A : 3,0 Starting test Speed rpm : 100 Del.quantity cm3/:- min. 1000 s: 54,0 1,8A

Remarks:

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 16.8°...17.2° (16.7...17.3°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Pin projection = 16.60...16.70 mm

Testing and adjusting the control-rodtravel sensor with evaluation circuit KDEP-P400

Receiving inspection
Shift control lever to full-load stop.
Set 13.5 V at stabilizer. Apply
1850 hPa to ALDA. Run up to speed of
1000 1/min; a voltage of 2.457...2.517
(2.427...2.547) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 21,5...22,5 (20,5...23,5) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until U = 1.633...1.639 (1.635...1.637) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 2.457... 2.517 V must be attained.

CORRECTION OF INJECTED-FUEL QUANTITY -Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 35,5°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of

starting cam) up to 1000 1/min. -Control-lever position 33.0°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 315 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 2,5 W40 : 23.10.92 Test sheet Edition : 11.10.91 Replaces Test oil : ISO-4113 Combination no. : 0 400 075 930 Injection pump Pump designation : PES5M55C32ORS177 EP type number : 0 410 055 974 Covernor Governor design: RSF34D/2300M74-1 : 0 420 021 156 Governer no. Cust, part no. : T4 Customer-spec. information Customer : MB-PKW Engine : UM602A-D/A (KAT) 1st version kW : 92.0 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 469 990 351 Inlet press., bar: 1.00 Test nozzle holder assembly : 0 681 343 009 Openina pressure, bar : 172...175 Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

Rack travel in mm : 20.00...22.00 Firing order : 1-2-4-5-3 Phasing : 0-72-144-216-288 Tolerance + - * : 0.00 (1.00) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1000 Rack travel in mm : 13.70...13.80 Del.quantity cm3/: 5.1...5.2 100 s: (5.0...5.3) Spread cm3 : 0.2100 s: (0.3) rpm : 345.0 2nd speed Rack travel in mm: 5.5...5.7 Del.quantity cm3/: 0.5...0.6 100 s: (0.4...0.85) Spread cm3 : 0.1100 s: (0.15) FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1000 Aneroid pressure h: 1850 Del.quantity : 51.0...52.0 1000 : (50.0...53.0) Spread cm3 : 2.50 1000 : (3.00) RATED SPEED 1st version Control lever position degrees: 50...0 3rd rack travel in: 8.5...8.9 Speed rpm : 2500 4th rack travel in: 2950 rpm : 0.00...1.00Speed SET IDLE CONTROL LEVER **POSITION** : 1000 **man** Rack travel in mm: 1.7...1.8 LOW IDLE 1

Control lever

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 30...32

: 1.70...1.80

: (1.65...1.85)

position degrees: 812 Setting point w/out bumper spring Speed rpm : 345 Rack travel in mm : 5.6 Testing: Speed rpm : 150 Minimum rack trave: 10 +1 Speed rpm : 345 Rack travel in mm : 5.505.70 Rack travel in mm : 2.50	Del.quantity cm3/: 48.550.5 1000 s: (47.551.5) Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1050 Speed rpm : 1000 Del.quantity cm3/: 33.034.0 1000 s: (32.035.0) Spread cm3 : 2.50 1000 s: (3.00)
Speed rpm : 550650 Speed rpm : 1000 Maximum rack trave: 1.80	STARTING FUEL DELIVERY
SET IDLE AUXILIARY SPRING Speed rpm : 400 Rack travel in mm : 4.24.4 : (4,14,5)	Speed rpm : 100 Del.quantity cm3/ : 52.00.0 1000 s: (52.00.0) Rack travel in mm : 20.100.00
TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 13.7013.80 2nd speed rpm : 1600 Rack travel in m: 13.0013.20 3rd speed rpm : 2200 Rack travel in m: 12.2012.40 Aneroid/Altitude Compensator Test	HIGH IDLE 1st version Aneroid pressure h: 1850 Speed rpm : 2500 Rack travel in mm : 8.508.90 Del.quantity cm3/ : 29.033.0 1000 s: (28.034.0) Spread cm3 : 2.50 1000 s: (3.00)
comparisator rest	LOW IDLE
1st version Setting Speed rpm : 1000 Pressure hPa : 1600 Rack travel nm : 0.300.70	Speed rpm: 345 Rack travel in mm: 5.505.70 Del.quantity cm3/: 5.06.0 1000 s: (4.03.5) Spread cm3: 1.00 1000 s: (1.50)
Measurement Speed 1/min: 1000	SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)
1st pressure hPa : 1050 Rack travel in m: 3.403.60 2nd pressure hPa : 750 Rack travel in m: 4.905.30 FUEL DELIVERY CHARACTERISTICS	Control lever at idle stop Speed rpm : 370 Rack travel in mm : (10,011.4) Del.quantity cm3/: - 1000 s: (27.535.5) Current A : 1.8
1st version Aneroid pressure h: 1850 Speed rpm : 1600 Del.quantity cm3/: 49.551.0	Control lever at full-load stop Speed rpm : 2950 Rack travel in mm : 0.01.0 Current short-duration A : 3.0 Starting test Speed rpm : 100 Del.quantity cm3/:- min. 1000 s: 52,0 1.8A

and the same of

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 20.00...22.00 Firing order : 1-2-4-5-3 Note remarks Test sheet : MB Edition : 27.10.92 Phasing : 0-72-144-216-288 Replaces : 01.09.92 Test oil : ISO-4113 Tolerance + -- ° : 0.00 (1.00) Combination no. : 0 400 075 930 Time to cyl. no. : 1 Injection pump BASIC SETTING Pump designation : PES5M55C32ORS177 EP type number : 0 410 055 974 1st speed rpm: 1000 Governor Governor design. : RSF340/2300M74-1 Rack travel in mm : 13.70...13.80 : 0 420 021 156 Governer no. Del.quantity cm3/ : 5.1...5.2 Cust. part no. : T8 100 s: (5.0...5.3) Customer-spec. information Customer : MB-PKW Spread cm3 : 0.2Engine : OMEOZA-D/A (KAT) 100 s: (0.3) 1st version kW : 92.0 2nd speed rpm : 345.0Rack travel in mm: 5.5...5.7 Del.quantity cm3/: 0.6...0.7 TEST BENCH REQUIREMENTS 100 s: (0.5...0.9) cm3 : 0.1 Test oil Spread inlet temp. °C : 38...42 100 s: (0.1) Overflow valve FULL LOAD DELIV. AT FULL LOAD STOP : 1 469 990 351 1st version Inlet press., bar: 1.00 Speed rpm : 1000 Aneroid pressure h: 1850
Del.quantity : 51.7...52.7
1000 : (50.7...53.7) Test nozzle holder : 1 688 901 111 assembly cm3 : 2.30 1000 : (3.00) Spread Openina pressure, bar : 147...150 RATED SPEED Test lines : 1 680 750 014 1st version Control lever Outside diameter position degrees: 50...0 x Wall thickness 3rd rack travel in: 8,5...8,9 Speed rpm : 2500 x Length mm : 6.00X2.00X600 4th rack travel in: 2950 (A) Injection pump setting values rpm : 0.00...1.00Speed Insp. values in parentheses Set equal delivery quant. SET IDLE CONTROL LEVER per values POSITION BEGINNING OF DELIVERY rpm Test pressure, bar: 30...32 Rack travel in mm : 1,7...1,8 : 1.70...1.80 LOW IDLE 1 Prestroke mm

Control lever

: (1.65...1.85)

position degrees: 8...12 FD<270 Rack travel in m: 3.40...3.60 Setting point w/out bumper spring 2nd pressure hPa : 750 rpm Rack travel in m: 4.90...5.30 Rack travel in mm: 5.6 FUEL DELIVERY CHARACTERISTICS Testing: Speed : 150 * rpm Minimum rack trave: 10.0+1 1st version rpm : 345 Speed Aneroid pressure h: 1850 Rack travel in mm : 5.50...5.70 Speed rpm : 1600 Del.quantity cm3/ : 50.0...51.5 1000 s: (49.0...52.5) Rack travel in mm: 2.50 : 550...650 Speed חכרו : 1000 Speed COM Spread cm3 : 2.50 Maximum rack trave: 1.80 1000 s: (3.0) Aneroid pressure h: 1850 LOW IDLE 2 Speed : 2200 rpm Del.quantity cm3/: 48.5...50.5 Control lever position degrees: 8-12FD 270 1000 s: (47.5...51.5) Setting point w/out bumper spring cm3 : 2.50 Spread 1000 s: (3.00) rpm Rack travel in mm: 5,6 Aneroid pressure h: 1050 Speed rpm : 1000 Del.quantity cm3/: 34.0...35.0 Testing: : 220 Speed 1000 s: (33.0...36.0) rpm Rack travel in mm: 8,0 ** cm3 : 2.50 Spread Speed : 345 rom 1000 s: (3.00) Rack travel in mm: 5,5...5,7 Speed : 580 חסרו Rack travel in mm: 2,5 STARTING FUEL DELIVERY Speed rpm Rack travel in mm: 2,5 : 100 Speed rpm SET IDLE AUXILIARY SPRING Del.quantity cm3/: 54.0...0.0 Speed rpm : 400 1000 s: (54.0...0.0) Rack travel in mm : 4,2-4,4FD270 Rack travel in mm : 20.10...0.00 : 4,7-4,9 FD 270 HIGH IDLE TORQUE CONTROL Torque control curve - 1st version 1st version ist speed rpm : 1000 Aneroid pressure h: 1850 Rack travel in m: 13.70...13.80 rpm : 2500 Speed 2nd speed rpm : 1600 Rack travel in mm : 8.50...8.90 Rack travel in m: 13.00...13.20 Del.quantity cm3/: 30.0...34.0 3rd speed rpm : 2200 1000 s: (29.0...35.0) Rack travel in m: 12.20...12.40 cm3 : 2.50Spread 1000 s: (3.00) Aneroid/Altitude Compensator Test LOW IDLE Speed rpm : 345 Rack travel in mm : 5.50...5.70 1st version Setting Del.quantity cm3/: 6.0...7.0 1000 s: (5.0...9.5) Speed : 1000 man Pressure hPa : 1600 Spread cm3 : 1.00 Rack travel mm : 0.30...0.70 1000 s: (1.50) Measurement SETTING/TESTING ELECTRONIC IDLE Speed 1/min: 1000 REGULATION (ELR) 1st pressure hPa : 1050

L03

Control lever at idle stop : 370 Speed rom

Rack travel in mm: (10,0...11,4)

Del.quantity cm3/:-

1000 s: (29,0...37,0)

Current A : 1.8

Control lever at full-load stop : 2950 Speed rpm

Rack travel in mm: 0.0...1.0

Current

short-duration A: 3,0

Starting test

Speed rpm : 100 Del.quantity cm3/: -min. 1000 s: 54,0

1,8A

Remarks:

ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD) Control lever on full-load stop. At n = 1000 min -Control-lever position 42,0°, I = 2.5 A, difference in delivery referenced to delivery (5.6...7.6) ccm/1000 strokes.

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 16.8°...17.2° (16.7...17.3°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

CORRECTION OF INJECTED-FUEL QUANTITY -Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

Sliding sleeve pre-travel = 6.25 mm

Testing and adjusting the control-rodtravel sensor with evaluation circuit KDEP-P400 Receiving inspection
Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.457...2.517 (2.427...2.547) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 21,5...22,5 (20,5...23,5) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until U = 1.633...1.639 (1.635...1.637) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to fullload stop; voltage value of 2.457... 2.517 V must be attained.

* Sliding sleeve pre-travel = 4.7 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 44,5° max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 315 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB

Edition : 28.10.92

Replaces :-

Test oil : ISO-4113

Combination no. : 0 400 075 935

Injection pump

Pump designation : PES5M55C32ORS158-1

EP type number : 0 410 055 979

Governor

Governor design. : RSF340/2300M65-4

Governer no. : 0 420 021 144

Cust. part no. T4

Customer-spec. information

Customer : MB PKW

Engine : OM602A-ECE

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x6t0

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30

: (2.15...2.35)

Rack travel in mm: 20.00...22.00

Firing order : 1-2-4-5-3

Phasing : 0-72-144-216-288

Tolerance + - * : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 5.1...5.2

100 s: (5.0...5.3)

Spread cm3: 0.2

100 s: (0.3)

2nd speed rpm : 315.0

Rack travel in mm : 5.3...5.5 Del.guantity cm3/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1850

Del.quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm3 : 2.50 1000 : (3.00)

RATED SPEED

1st version

Control Lever

position degrees: 50...0

3rd rack travel in: 8,1...8,5

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm: 1,7...1,8

LOW IDLE 1

Control lever

position degrees: 812 Setting point w/out bumper spring Speed rpm : 315 Rack travel in mm : 5.4 Testing: Speed rpm : 220 Minimum rack trave: 8.00 Speed rpm : 315	Del.quantity cm3/: 48.550.5 1000 s: (47.551.5) Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1050 Speed rpm : 1000 Del.quantity cm3/: 33.934.0 1000 s: (32.035.0) Spread cm3 : 2.50
Rack travel in mm: 5.305.50 Rack travel in mm: 2.50 Speed rpm: 540640 Speed rpm: 1000 Maximum rack trave: 1.80	1000 s: (3.00) STARTING FUEL DELIVERY
SET IDLE AUXILIARY SPRING Speed rpm : 380 Rack travel in mm : 4,24,4 : (4,14,5)	Speed
TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 13.9014.00 2nd speed rpm : 1600 Rack travel in m: 13.1013.30 3rd speed rpm : 2200 Rack travel in m: 12.3012.50 Aneroid/Altitude Compensator Test	HIGH IDLE 1st version Aneroid pressure h: 1850 Speed rpm : 2500 Rack travel in mm : 8.108.50 Del.quantity cm3/: 29.033.0 1000 s: (28.034.0) Spread cm3 : 2.50 1000 s: (3.00)
1st version Setting Speed rpm : 1000 Pressure hPa : 1600 Rack travel mm : 0.500.90	LOW IDLE Speed rpm: 315 Rack travel in mm: 5.305.50 Del.quantity cm3/: 5.56.5 1000 s: (4.59.0) Spread cm3: 1.00 1000 s: (1.50)
N/easurement Speed 1/min: 1000 1st pressure hPa: 1050 Rack travel in m: 3.904.20 2nd pressure hPa: 750	SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)
Rack travel in m: 5.706.10 FUEL DELIVERY CHARACTERISTICS	control lever at idle stop Speed rpm : 340 Rack travel in mm : (12,614,0) Del.quantity cm3/:- 1000 s: (41,049,0) Current A : 1,8
1st version Aneroid pressure h: 1850 Speed rpm : 1600 Del.quantity cm3/ : 50.051.5	Control lever at full-load stop Speed rpm: 2950 Rack travel in mm: 0,01,0 Current short-duration A: 3,0 Starting test Speed rpm: 100 Del.quantity cm3/:- min. 1000 s: 52,0 1,8A

Remarks:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
—Control—lever position 35,5°, max.
0.2 mm control—rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
—Control—lever position 33.0°, control—rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE —Control lever at idle stop. With n = 315 1/min. and pu = 450 mbar, control rod must move quickly to control—rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1. Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED—FUEL GUANTITY—Set max. change plus/minus 0.75 mm control—rod travel at correction screw on ALDA pressure box.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : 01.09.92 Edition Replaces Test oil : ISO-4113 Combination no. : 0 400 075 935 Injection pump Pump designation : PES5M55C32ORS158-1 EP type number : 0 410 055 979 Governor Governor design.: RSF340/2300M65-4 Governer no. : 0 420 021 144 Cust. part no. : T8 Customer-spec. information Customer : MB-PKW : OM602A-ECE ALDA Engine 1st version kW : 92.0 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 469 990 351 Inlet press., bar: 1.00 Test nozzle holder assembly : 0 681 901 111 Opening pressure, bar : 144...150 Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 30...32 Prestroke mm : 2.20...2.30 : (2.15...2.35) L08

Rack travel in mm : 20.00...22.00 firing order : 1-2-4-5-3

Phasing : 0-72-144-216-288

Tolerance + - * : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 5.2...5.3

100 s: (5.1...5.4)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 315.0 Rack travel in mm : 5.3...5.5 Del.quantity cm3/: 0.6...0.7 100 s: (0.5...1.0)

cm3 : 0.1

Spread 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1850

: 52.5...53.5 Del.quantity 1000 : (51.5...54.5)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version Control Lever

position degrees: 50...0 3rd rack travel in: 8,1...8,5 rpm : 2500 Speed

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

: 1000 rpm Rack travel in mm: 1,7...1,8

LOW IDLE 1 Control Lever

Del.quantity cm3/: 51.0...52.5 1000 s: (50.0...53.5) Spread cm3 : 2.50 position degrees: 8...12 Setting point w/out bumper spring Speed Rack travel in mm: 5.4 1000 s: (3.00) Aneroid pressure h: 1050 Testina: : 1000 Speed rpm : 220 Speed Del.quantity cm3/: 34.0...35.0 morn Minimum rack trave: 8.00 1000 s: (33.0...36.0) : 315 Speed **HOW** Spread cm3 : 2.50 Rack travel in mm : 5.30...5.50 1000 s: (3.00) Rack travel in mm: 2.50 : 540...640 Speed COM Speed rpm : 1000 STARTING FUEL DELIVERY Maximum rack trave: 1.80 SET IDLE AUXILIARY SPRING Speed rpm : 100 mpm : 380 Speed Del.quantity cm3/: 53.0...0.0 Rack travel in mm : 4,20...4,40 1000 s: (53.0...0.0) : (4,10...4,50) Rack travel in mm : 20.10...0.00 TORQUE CONTROL HIGH IDLE Torque control curve - 1st version 1st speed rom : 1000 1st version Rack travel in m: 13.90...14.00 Aneroid pressure h: 1850 2nd speed rpm : 1600 : 2500 Speed rom Rack travel in m: 13.10...13.30 Rack travel in mm : 8.10...8.50 3rd speed rpm : 2200 Del.quantity cm3/: 29.0...33.0 Rack travel in m: 12.30...12.50 1000 s: (28.0...34.0) Spread cm3 : 2.50Aneroid/Altitude 1000 s: (3.00) Compensator Test LOW IDLE 1st version Speed rpm : 315 Rack travel in mm : 5.30...5.50 Setting Del.quantity cm3/: 6.5...7.5 1000 s: (5.5...10.0) Speed : 1000 CDM Pressure hPa : 1600 Rack travel mm : 0.50...0.90 cm3 : 1.00 Spread 1000 s: (1.50) Measurement Speed 1/min: 1000 SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) 1st pressure hPa : 1050 Rack travel in m: 3.90...4.20 and pressure hPa : 750 Control lever at idle stop Rack travel in m: 5.70...6.10 rpm : 340 Speed Rack travel in mm : (12,6...14,0 FUEL DELIVERY CHARACTERISTICS Del.quantity cm3/: -1000 s: (42,0...50,0) Current A 1st version Aneroid pressure h: 1850 Control lever at full-load stop Speed rpm : 1600 Speed : 2950 rom Del.quantity cm3/: 52.5...53.5 Rack travel in mm: 0,0...1,0 1000 s: (51.5...54.5) Current Spread cm3 : 2.50short-duration A: 3,0 1000 s: (3.0) Starting test Aneroid pressure h: 1850 rpm : 100 Speed Speed : 2200 Del.quantity cm3/: -min. 1000 s: 53,0 rpm 1,8A

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
—Control—lever position 35,5°, max.

0.2 mm control—rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
—Control—lever position 33.0°, control—rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 315 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY —Set max. change plus/minus 0.75 mm control—rod travel at correction screw on ALDA pressure box.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: MB 2,5 c7 : 27.10.92 Test sheet Edition Replaces : 08.10.91 Test oil : ISO-4113

Combination no. : 0 400 075 936

Injection pump

Pump designation : PES5M55C32ORS158 EP type number : 0 410 055 986

Governor

Governor design. : RSF340/2300M64-14 Governer no. : 0 420 021 142

Cust. part no. : T4

Customer-spec. information Customer : MB-PKW

Engine : OM602A-Abgast.

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 9 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30

: (2.15...2.35)

Rack travel in mm : 20.00...22.00 Firing order : 1-2-4-5-3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 5.1...5.2

100 s: (5.0...5.3)

Spread cm3 : 0.2

100 s: (0.3)

rpm : 315.0 2nd speed Rack travel in mm: 5.3...5.5

Del.quantity cm3/: 0.55...0.65

100 s: (0.45...0.9)

cm3 : 0.1 Spread

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 1850

: 51.0...52.0 1006 : (50.0...53.0) Del.quantity

Spread

cm3 : 2.50 1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 8.1...8.5

rpm : 2500 Speed

4th rack travel in: 2950

rpm : 0.00...1.00Speed

SET IDLE CONTROL LEVER **POSITION**

Speed rpm : 1000 Rack travel in mm: 1,7...1,8

LOW IDLE 1 Control lever

position degrees: 812 Setting point w/out bumper spring Speed rpm : 315 Rack travel in mm : 5.4	bel.quantity cm3/: 48.550.5 1000 s: (47.551.5) Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1050
Testing: Speed rpm : 220 Minimum rack trave: 8.00 Speed rpm : 315 Rack travel in mm : 5.305.50 Rack travel in mm : 2.50 Speed rpm : 540640	Speed rpm : 1000 Del.quantity cm3/: 33.034.0 1000 s: (32.035.0) Spread cm3 : 2.50 1000 s: (3.00)
Speed rpm : 1000 Maximum rack trave: 1.80	STARTING FUEL DELIVERY
SET IDLE AUXILIARY SPRING Speed rym : 330 Rack travel in mm : 4,24,4 : (4,14,5)	Speed rpm : 100 Del.quantity cm3/: 52.00.0 1000 s: (52.00.0) Rack travel in mm : 20.100.00
TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 13.9014.00 2nd speed rpm : 1600 Rack travel in m: 13.1013.30 3rd speed rpm : 2200 Rack travel in m: 12.3012.50	HIGH IDLE 1st version Aneroid pressure h: 1850 Speed rpm: 2500 Rack travel in mm: 8.108.50 Del.quantity cm3/: 29.033.0 1000 s: (28.034.0) Spread cm3: 2.50
Aneroid/Altitude Compensator Test	1000 s: (3.00) LOW IDLE
1st version Setting Speed rpm : 1000 Pressure hPa : 1600 Rack travel mm : 0.500.90	Speed rpm : 315 Rack travel in mm : 5.305.50 Del.quantity cm3/: 5.56.5 1000 s: (4.59.0) Spread cm3 : 1.00 1000 s: (1.50)
Measurement Speed 1/min: 1000 1st pressure hPa: 1050	SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)
Rack travel in m: 3.904.20 2nd pressure hPa : 750 Rack travel in m: 5.706.10 FUEL DELIVERY CHARACTERISTICS	Control lever at idle stop Speed rpm : 340 Rack travel in mm : (12,614,0) Del.quantity cm3/: 1000 s: (41,049,0)
1st version Aneroid pressure h: 1850 Speed rpm : 1600 Del.quantity cm3/ : 50.051.5	Current A : 1,8 Control lever at full-load stop Speed rpm : 2950 Rack travel in mm : 0.01.0 Current short-duration A : 3.0 Starting test Speed rpm : 100 Del.quantity cm3/:- min. 1000 s: 52,0 1,8A

Sliding sleeve pre-travel = 6.5 mm

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 315 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1. Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY -Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure bcx.

Testing and adjusting the control-rod-travel sensor with evaluation circuit KDEP-P400
Receiving inspection
Shift control lever to full-load stop.
Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.472...2.532 (2.442...2.562) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 23.0...24.0 (22.0...25.0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until U = 1.633...1.639 (1.635...1.637) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 2.472... 2.532 V must be attained.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 35,5°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
-Control-lever position 33.0°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB : 27.10.92 Edition Replaces Test oil : ISO-4113 Combination no. : 0 400 075 936 Injection pump Pump designation : PES5M55c320Rs158 EP type number : 0 410 055 986 Governor Governor design. : RSF340/2300M64-14 Governer no. : 0 420 021 142 Cust. part no. : T8 Customer-spec, information Customer : MB-PKW Engine : OM602A-Abgast. 1st version kW : 92.0 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 469 990 351 Inlet press., bar: 1.00 Test nozzle holder assembly : 0 688 901 111 Openina pressure, bar : 144...150 Test lines : 1 680 750 014 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Rack travel in mm : 20.00...22.00 : 1-2-4-5-3 Firing order Phasing : 0-72-144-216-288 Tolerance + - * : 0.00 (1.00) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1000 Rack travel in mm : 13.90...14.00 Del.quantity cm3/: 5.2...5.3 100 s: (5.1...5.4) Spread cm3 : 0.2100 s: (0.3) 2nd speed rpm : 315.0 Rack travel in mm : 5.3...5.5 Del.quantity cm3/: 0.65...0.75 100 s: (0.55...1.0) cm3 : 0.1 Spread 100 s: (0.15) FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1000 Aneroid pressure h: 1850 : 52.5...53.5 Del.quantity 1000 : (51.5...54.5) : 2.50 Spread cm3 1000 : (3.00) RATED SPEED 1st version Control lever position degrees: 50...0 3rd rack travel in: 8.1...8.5 Speed man : 2500 4th rack travel in: 2950 Speed rpm : 0.00...1.00 SET IDLE CONTROL LEVER **POSITION** : 1000 rpm Rack travel in mm: 1,7...1,8 LOW IDLE 1 Control lever

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 30...32

: 2.20...2.30

: (2.15...2.35)

position degrees: 812 Setting point w/out bumper spring Speed rpm: 315 Rack travel in mrn: 5.4 Testing: Speed rpm: 220 Minimum rack trave: 8.00 Speed rpm: 315 Rack travel in mrn: 5.305.50 Rack travel in mrn: 2.50	Del.quantity cm3/: 48.550.5 1000 s: (47.551.5) Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1050 Spæed rpm : 1000 Del.quantity cm3/: 34.035.0 1000 s: (33.036.0) Spread cm3 : 2.50 1000 s: (3.00)
Speed rpm: 540640 Speed rpm: 1000 Maximum rack trave: 1.80	STARTING FUEL DELIVERY
SET IDLE AUXILIARY SPRING Speed rpm : 380 Rack travel in mm : 4,24,4 : (4,14,5)	Speed rpm : 100 Del.quantity cm3/ : 53.00.0 1000 s: (53.00.0) Rack travel in mm : 20.100.00
TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 13.9014.00 2nd speed rpm : 1600 Rack travel in m: 13.1013.30 3rd speed rpm : 2200 Rack travel in m: 12.3012.50 Aneroid/Altitude	HIGH IDLE 1st version Aneroid pressure h: 1850 Speed rpm : 2500 Rack travel in mm : 8.108.50 Del.quantity cm3/: 29.033.0 1000 s: (28.034.0) Spread cm3 : 2.50 1000 s: (3.00)
Compensator Test	LOW IDLE
1st version Setting Speed rpm : 1000 Pressure hPa : 1600 Rack travel mm : 0.500.90	Speed rpm : 315 Rack travel in mm : 5.305.50 Del.quantity cm3/ : 6.57.5 1000 s: (5.510.0) Spread cm3 : 1.00 1000 s: (1.50)
Measurement Speed 1/min: 1000	SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)
1st pressure hPa : 1050 Rack travel in m: 3.904.20 2nd pressure hPa : 750 Rack travel in m: 5.706.10 FUEL DELIVERY CHARACTERISTICS	Control lever at idle stop Speed rpm : 340 Rack travel in mm : (12,614,0) Del.quantity cm3/: - 1000 s: (42,050,0) Current A : 1,8
1st version Aneroid pressure h: 1850 Speed rpm : 1600 Del.quantity cm3/ : 51.052.5 1000 s: (50.053.5) Spread cm3 : 2.50 1000 s: (3.0) Aneroid pressure h: 1850 Speed rpm : 2200	Control lever at full-load stop Speed rpm : 2950 Rack travel in mm : 0.01.0 Current short-duration A : 3.0 Starting test Speed rpm : 100 Del.quantity cm3/:- min. 1000 s: 53,0 1,8A

Sliding sleeve pre-travel = 6.5 mm

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 315 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1. Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED—FUEL QUANTITY—Set max. change plus/minus 0.75 mm control—rod travel at correction screw on ALDA pressure box.

Testing and adjusting the control-rod-travel sensor with evaluation circuit KDEP-P4:00
Receiving inspection
Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.472...2.532 (2.442...2.562) V must be displayed on the digital voltmeter.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 35,5°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
-Control-lever position 33.0°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

BOSCH INU. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 2,5 C2 Edition : 28.10.92 Replaces : 14.10.91 Test oil : ISO-4113 Combination no. : 0 400 075 937 Injection pump Pump designation : PES5M55C32ORS158 EP type number : 0 410 055 986 Governor Governor design. : RSF340/2300M74 : 0 420 021 140 Governer no. Cust. part no. : T4 Customer-spec. information Custamer : MB-PKW Engine : OM6O2A-Abgast. 1st version kW : 92.0 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 469 990 351 Inlet press., bar: 1.00 Test nozzle holder assembly : 0 681 343 009 Opening 1 4 1 pressure, bar : 172...175 Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

Rack travel in mm : 20.00...22.00 Firing order : 1-2-4-5-3 Phasina : 0-72-144-216-288 Tolerance + - ° : 0.00 (1.00)Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1000 Rack travel in mm : 13.90...14.00 Del.quantity cm3/ : 5.1...5.2 100 s: (5.0...5.3) Spread cm3 : 0.2100 s: (0.3) 2nd speed rpm : 345.0 Rack travel in mm : 5.3...5.5 Del.quantity cm3/: 0.5...0.6 100 s: (0.4...0.85) Spread cm3 : 0.1100 s: (0.15) FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1000 Aneroid pressure h: 1850 Del.quantity : 51.0...52.0 1000 : (50.0...53.0) cm3 : 2.50 Spread 1000 : (3.00) RATED SPEED 1st version Control lever position degrees: 50...0 3rd rack travel in: 8.1...8.5 Speed rpm : 2500 4th rack travel in: 2950 rpm : 0.00...1.00Speed SET IDLE CONTROL LEVER POSITION rpm : 1000 Rack travel in mm: 1.7...1.8 LOW IDLE 1

Control Lever

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 30...32

: 2.20...2.30

: (2.15...2.35)

position degrees: 812 Setting point w/out bumper spring Speed rpm : 345 Rack travel in mm : 5.4 Testing: Speed rpm : 150 Minimum rack trave: 10.0+1 Speed rpm : 345 Rack travel in mm : 5.305.50 Rack travel in mm : 2.50 Speed rpm : 540640 Speed rpm : 1000 Maximum rack trave: 1.80	Del.quantity cm3/: 48.550.5 1000 s: (47.551.5) Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1050 Speed rpm : 1000 Del.quantity cm3/: 33.034.0 1000 s: (32.035.0) Spread cm3 : 2.50 1000 s: (3.00) STARTING FUEL DELIVERY
SET IDLE AUXILIARY SPRING Speed rpm : 380 Rack travel in mm : 4.24.4 : (4.14.5)	Speed rpm : 100 Del.quantity cm3/ : 52.00.0 1000 s: (52.00.0) Rack travel in mm : 20.100.00
TORQUE CONTROL Torque control curve — 1st version 1st speed rpm : 1000 Rack travel in m: 13.9014.00 2nd speed rpm : 1600 Rack travel in m: 13.1013.30 3rd speed rpm : 2200 Rack travel in m: 12.3012.50 Aneroid/Altitude Compensator Test	HIGH IDLE 1st version Aneroid pressure h: 1850 Speed rpm : 2500 Rack travel in mm : 8.108.50 Del.quantity cm:3/ : 29.035.0 1000 s: (28.034.0) Spread cm3 : 2.50 1000 s: (3.00)
1st version Setting Speed rpm : 1000 Pressure hPa : 1600 Rack travel nm : 0.500.96	LOW IDLE Speed
Speed 1/min: 1000 1st pressure hPa: 1050 Rack travel in m: 3.904.20	SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)
2nd pressure hPa : 750 Rack travel in m: 5.706.10 FUEL DELIVERY CHARACTERISTICS	Control lever at idle stop Speed rpm: 370 Rack travel in mm: (10.011.4) Del.quantity cm3/: - 1000 s: (31,539,5)
1st version Aneroid pressure h: 1850 Speed rpm : 1600 Del.quantity cm3/: 50.051.5	Current A : 1.8 Control lever at full-load stop Speed rpm : 2950 Rack travel in mm : 0.01.0 Current short-duration A : 3,0 Starting test Speed rpm : 100 Del.quantity cm3/:- min. 1000 s: 52.0 1.8A

* Sliding sleeve pre-travel = 4.7 mm

CHECKING THE PNEUMATIC SHUTOFF BOX -Control lever up against idle stop. At n = 345 1/min and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 35,5°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
-Control-lever position 33.0°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD)
Control lever on full-load stop. At n = 1000 min. -1,
I = 2.5 A, difference in delivery referenced to full-load delivery (4.4...6.4) ccm/1000 strokes.

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1. Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY
-Set max. change plus/minus 0.75 mm
control-rod travel at correction
screw on ALDA pressure box.

BOSCH INU. PUMP TEST SPECIFICATIONS Rack travel in mm : 20.00...22.00 Firing order : 1-2-4-5-3 Note remarks Test sheet Edition : 28.10.92 Phasina : 0-72-144-216-288 Replaces Test oil : ISO-4113 Tolerance + - * : 0.00 (1.00) Combination no. : 0 400 075 937 Time to cyl. no. : 1 Injection pump BASIC SETTING Pump designation : PES5M55C32ORS158 EP type number : 0 410 055 986 1st speed rpm: 1000 Governor Covernor design. : RSF340/23C0M74 Rack travel in mm : 13.90...14.00 : 0 420 021 140 Governer no. Del.quantity cm3/ : 5.2...5.3 Cust. part no. : 18 100 s: (5.1...5.4) Customer-spec, information Customer : MB-PKW Spread cm3 : 0.2Engine : OM602A-Abgast. 100 s: (0.3) 2nd speed rpm : 345.0 Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 0.6...0.7 1st version kW : 92.0 TEST BENCH REQUIREMENTS 100 s: (0.5...0.9) Test oil Spread cm3 : 0.1inlet temp. °C : 38...42 100 s: (0.1) Overflow valve FULL LOAD DELIV. AT FULL LOAD STOP : 1 469 990 351 1st version Inlet press., bar: 1.00 Speed rpm : 1000 Aneroid pressure h: 1850 Test nozzle holder : 52.5...53.5 Del.quantity 1000 : (51.5...54.5) : 0 688 901 111 assembly : 2.50 Spread cm3 **Openina** 1000 : (3.00)pressure, bar : 147...150 RATED SPEED Test Lines : 1 680 750 014 1st version Control lever Outside diameter position degrees: 50...0 x Wall thickness 3rd rack travel in: 8,1...8,5 x Length mm : 6.00x2.00x600 Speed rom : 2500 4th rack travel in: 2950 (A) Injection pump setting values : 0.00...1.00 Speed rpm Insp. values in parentheses Set equal delivery quant. SET IDLE CONTROL LEVER per values ____ **POSITION** BEGINNING OF DELIVERY man Test pressure, bar: 30...32 Rack travel in mm: 1,7...1,8 Prestroke mm : 2.20...2.30 LOW IDLE 1

Control lever

: (2.15...2.35)

position degrees: 812 FD<270 Setting point w/out bumper spring Speed rpm : 345 Rack travel in mm : 5.4	Rack travel in m: 3.904.20 2nd pressure hPa : 750 Rack travel in m: 5.706.10
	FUEL DELIVERY CHARACTERISTICS
Testing: Speed rpm : 150 * Minimum rack trave: 10,0+1 Speed rpm : 345 Rack travel in mm : 5.305.50 Rack travel in mm : 2.50 Speed rpm : 540640 Speed rpm : 1000 Maximum rack trave: 1.80	1st version Aneroid pressure h: 1850 Speed rpm : 1600 Del.quantity cm3/: 51.052.5 1000 s: (50.053.5) Spread cm3 : 2.50 1000 s: (3.0) Aneroid pressure h: 1850
LOW IDLE 2 Control lever position degrees: 8-12FD 270 Setting point w/out bumper spring Speed rpm : 345 Rack travel in mm : 5.35.5	Speed rpm : 2200 Del.quantity cm3/ : 48.550.5 1000 s: (47.551.5) Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1950
Testing: Speed rpm : 220 Rack travel in mm : 8,0** Speed rpm : 345 Rack travel in mm : 5,35,5	Speed rpm : 1000 Del.quantity cm3/: 34.035.0 1000 s: (33.036.0) Spread cm3 : 2.50 1000 s: (3.00)
Speed rpm : 540 Rack travel in mm : 2,5 Speed rpm : 640 Rack travel in mm : 2,5	STARTING FUEL DELIVERY
SET IDLE AUXILIARY SPRING Speed rpm : 380 Rack travel in mm : 4.24,4 : (4,14,5)	Speed rpm : 100 Del.quantity cm3/: 53.00.0 1000 s: (53.00.0) Rack travel in mm : 20.100.00
TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 13.9014.00 2nd speed rpm : 1600 Rack travel in m: 13.1013.30 3rd speed rpm : 2200 Rack travel in m: 12.3012.50	HIGH IDLE 1st version Aneroid pressure h: 1850 Speed rpm : 2500 Rack travel in mm : 8.108.50 Del.quantity cm3/ : 29.033.0 1000 s: (28.034.0) Spread cm3 : 2.50 1000 s: (3.00)
Aneroid/Altitude Compensator Test	LOW IDLE
1st version Setting Speed rpm : 1000 Pressure hPa : 1600 Rack travel mm : 0.500.90	Speed rpm: 345 Rack travel in mm: 5.305.50 Del.quantity cm3/: 6.07.0 1000 s: (5.09.5) Spread cm3: 1.00 1000 s: (1.50)
Measurement Speed 1/min: 1000	SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)
1st pressure hPa : 1050	Ţ

Control lever at idle stop Speed rpm : 370 Rack travel in mm : (10,0...11,4) Del.quantity cm3/:-1000 s: (32,5...40,5) Current A : 1,8 Control lever at full-load stop rpm : 2950 Rack travel in mm: 0,0...1,0 Current short-duration A: 3,0 Starting test Speed rpm : 100 Del.quantity cm3/:min. 1000 s: 53,0 1,8A Remarks: Sliding sleeve pre-travel = 6.25 mm * Sliding sleeve pre-travel = 4.7 mm CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 44,5° max. 0.2 mm control-rod travel deduction ad allowable after switchover point (of starting cam) up to 1000 1/miri. -Control-lever position 42,0°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam). CHECKING THE PNEUMATIC SHUTOFF BOX -Control lever up against idle stop. At n = 345 1/min and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1. Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam CORRECTION OF INJECTED-FUEL QUANTITY -Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

Testing and adjusting the control-rod-

travel sensor with evaluation circuit KDEP-P400
Receiving inspection
Shift control lever to full-load stop.
Set 13.5 V at stabilizer. Apply
1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.472...2.532 (2.442...2.562) V must be displayed on the digital voltmeter.

ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD) Control lever on full-load stop. At n = 1000 m I = 2.5 A, difference in delivery referenced to delivery (5.6...7.6) ccm/1000 strokes.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 C10 : 28.10.92 Edition Replaces : 14.10.91

Test oil : ISO-4113

Combination no. : 0 400 075 944

Injection pump

Pump designation : PES5M55c32ORS177 EP type number : 0 410 055 974

Governor

Governor design. : RSF340/2300M64-12

Governer no. : 0 420 021 127

Cust. part no. : T4

Customer-spec. information Customer : MB-PKW

Engine : 0M602A-USA MJ90

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil

-1

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 1.70...1.80 Prestroke mm

: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1-2-4-5-3

Phasina : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 1000

Rack travel in mm: 13.70...13.80

Del.guantity cm3/: 5.1...5.2

100 s: (5.0...5.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 315.0

Rack travel in mm : 5.6...5.8 Del.quantity cm3/ : 0.5...0.6

100 s: (0.4...0.85)

Spread cm3 : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1850

Del.quantity : 51.0...53.0)

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version

Control Lever

position degrees: 50...0 3rd rack travel in: 8.5...8.9

Speed : 2500 rpm

4th rack travel in: 2950

: 0.00...1.00 Speed man

SET IDLE CONTROL LEVER **POSITION**

rom : 1000 Rack travel in mm: 1.7...1.8

LOW IDLE 1

Control lever

position degrees: 812 Setting point w/out bumper spring Speed rpm : 315 Rack travel in mm : 5.7	Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1050 Speed rpm : 1000
Testing: Speed rpm : 220 Minimum rack trave: 8.00 Speed rpm : 315	Del.quantity cm3/: 33.034.0 1000 s: (32.035.0) Spread cm3 : 2.50 1000 s: (3.00)
Rack travel in mm: 5.605.80 Speed rpm: 1000 Maximum rack trave: 1.80	STARTING FUEL DELIVERY
SET IDLE AUXILIARY SPRING Speed rpm : 380 Rack travel in mm : 4.74.9 : (4.65.0)	Speed rpm : 100 Del.quantity cm3/ : 52.00.0 1000 s: (52.00.0) Rack travel in mm : 20.100.00
TORQUE CONTROL	HIGH IDLE
Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 13.7013.80 2nd speed rpm : 1600 Rack travel in m: 13.0013.20 3rd speed rpm : 2200 Rack travel in m: 12.2012.40 Aneroid/Altitude	1st version Aneroid pressure h: 1850 Speed rpm : 2500 Rack travel in mm : 8.508.90 Del.quantity cm3/ : 29.033.0
Compensator Test	LOW IDLE
1st version Setting Speed rpm : 1000 Pressure hPa : 1600 Rack travel mm : 0.300.70	Speed rpm: 315 Rack travel in mm: 5.605.80 Del.quantity cm3/: 5.06.0 1000 s: (4.08.5) Spread cm3: 1.00 1000 s: (1.50)
Measurement Speed 1/min: 1000	SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)
1st pressure hPa : 1050 Rack travel in m: 3.403.60	HEGGETT TON VECTO
2nd pressure hPa : 750 Rack travel in m: 4.905.30 FUEL DELIVERY CHARACTERISTICS	Control lever at idle stop Speed rpm : 340 Rack travel in mm : (12.614.0) Del.quantity cm3/: -
1-+	1000 s: (41.049.0) Current A : 1.8
1st version Aneroid pressure h: 1850 Speed rpm : 1600 Del.quantity cm3/ : 49.551.0 1000 s: (48.552.0) Spread cm3 : 2.50 1000 s: (3.) Aneroid pressure h: 1850 Speed rpm : 2200 Del.quantity cm3/ : 48.550.5 1000 s: (47.551.5)	Control lever at full-load stop Speed rpm: 2950 Rack travel in mm: 0.01.0 Current short-duration A: 3.0 Starting test Speed rpm: 100 Del.quantity cm3/:- min. 1000 s: 52.0 1,8A Remarks:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
—Control—lever position 35,5°, max.

0.2 mm control—rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
—Control—lever position 33.0°, control—rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 315 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 16.8°...17.2° (16.7...17.3°) angular displacement of cam following start of delivery of cylinder no. 1.

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY
-Set max. change plus/minus 0.75 mm
control-rod travel at correction
screw on ALDA pressure box.

Testing and adjusting the control-rod-travel sensor with evaluation circuit KDEP-P400 Receiving inspection
Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.487...2.547 (2.457...2.577) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 18.5...19.5 17.50...20.5) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until U = 1.633...1.639 (1.635...1.637) V is indicated. Tighten fastening screws

with 1...2 Nm. Control lever to fullload stop; voltage value of 2.487... 2.547 V must be attained. BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet Edition : 28.10.92 Replaces Test oil : ISO-4113 Combination no. : 0 400 075 944 Injection pump Pump designation : PES5M55C32ORS177 EP type number : 0 410 055 974 Governor Governor design. : RSF340/2300M64-12 : 0 420 021 127 Governer no. Cust. part no. : T8 Customer-spec. information Customer : MB-PKW Engine : 0M602A-USA MJ90 1st version kW : 92.0 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 469 990 351 Inlet press., bar: 1.00 Test nozzle holder assembly : 0 688 901 111 Opening pressure, bar : 144...150 Test Lines : 1 680 750 014

Outside diameter x Wall thickness x Length mm : 6.00X2.00X600 (A) Injection pump setting values

Set equal delivery quant. per values ____ BEGINNING OF DELIVERY Test pressure, bar: 30...32

Pristroke mm : 1.70...1.80 : (1.65...1.85)

Insp. values in parentheses

Rack travel in mm : 20.00...22.00 Firing order : 1-2-4-5-3

Phasing : 0-72-144-216-288

Tolerance $+ - \cdot : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 13,70...13.80

Del.quantity cm3/: 5.1...5.2

100 s: (5.0...5.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpa : 315.0 Rack travel in mm: 5.6...5.8 Del.quantity cm3/: 0.6...0.7

100 s: (0.5...0.9)

Spread cm3 : 0.1100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure in: 1850

Del.quantity : 51.7...52.7 1000 : (50.7...53.7)

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version Control lever

position degrees: 50...0 3rd rack travel in: 8,5...8,9 Speed rpm : 2500

4th rack travel in: 2950 : 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

rpm Rack travel in mm: 1,7...1,8

LOW IDLE 1 Control lever

position degrees: 8...12 Spread cm3 : 2.50Setting point w/out bumper spring 1000 s: (3.00) : 315 Speed rpm Aneroid pressure h: 1050 Rack travel in mm: 5.7 : 1000 Speed הוכות Del.quantity cm3/: 34.0...35.0 1000 s: (33.0...36.0) Testing: Speed man : 220 cm3 : 2.50 Spread Minimum rack trave: 8.00 1000 s: (3.00) rpm : 315 Speed Rack travel in mm : 5.60...5.80 : 1000 Speed CDM STARTING FUEL DELIVERY Maximum rack trave: 1.80 SET IDLE AUXILIARY SPRING Speed riom : 100 rpm : 380 Del.quantity cm3/: 54.0 Speed Rack travel in mm: 4,7...4,9 : (4,6...5,0) 1000 s: -Rack travel in mm: 20.1 TORQUE CONTROL HIGH IDLE Torque control curve - 1st version : 1000 ist speed CDin 1st version Rack travel in m: 13.70...13.80 Aneroid pressure h: 1850 Speed rpm : 2500 Rack travel in mm : 8.50...8.90 2nd speed rpm : 1600 Rack travel in m: 13.00...13.20 3rd speed rpm : 2200 Del.quantity cm3/: 30.0...34.0 Rack travel in m: 12.20...12.40 1000 s: (29.0...35.0) cm3 : 2.50 Spread Aneroid/Altitude 1000 s: (3.00) Compensator Test LOW IDLE Speed rpm : 315
Rack travel in mm : 5.60...5.80 1st version Setting : 1000 Speed nom Del.guantity cm3/: 6.0...7.0 hPa : 1600 Pressure 1000 s: (5.0...9.5) : 0.30...0.70 Rack travel mm cm3 : 1.00Spread 1000 s: (1.50) Measurement 1/min: 1000 Speed SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) 1st pressure hPa : 1050 Rack travel in m: 3.40...3.60 2nd pressure hPa : 750 Control lever at idle stop Rack travel in m: 4.90...5.30 rpm : 340 Rack travel in mm : (12,6...14,0) FUEL DELIVERY CHARACTERISTICS Del.quantity cm3/: -1000 s: (42,5...50,5) Current A : 1,8 1st version Aneroid pressure h: 1850 Control lever at full-load stop Speed rpm : 1600 : 2950 rpm Del.quantity cm3/: 50.0...51.5 1000 s: (49.0...52.5) Rack travel in mm: 0,0...1,0 Current Spread cm3 : 2.50 short-duration A: 3,0 1000 s: (3.0) Starting test Aneroid pressure h: 1850 rpm : 100 Speed : 2200 Del.quantity cm3/: man Del.quantity cm3/: 48.5...50.5 1000 s: 54,0 / 1,8A min. 1000 s: (47.5...51.5)

Remarks:

CORRECTION OF INJECTED-FUEL QUANTITY
-Set max. change plus/minus 0.75 mm
control-rod travel at correction
screw on ALDA pressure box.

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
—Control-lever position 35,5°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
—Control-lever position 33.0°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 315 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 16.8°...17.2° (16.7...17.3°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Testing and adjusting the control-rodtravel sensor with evaluation circuit KDEP-P400 Receiving inspection Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.487...2.547 (2.457...2.577) V must be displayed on the digital voltmeter.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB

Edition : 29.10.92 Replaces : 08.07.92 Test oil : ISO-4113

Combination no. : 0 400 075 959

Injection pump

Pump designation : PES5M55C32ORS166 EP type number : 0 410 055 980

Governor

Governor design. : RSF340/2300M64-1 Governor no. : 0 420 021 050

Cust. part no. : T4

Customer—spec. information Customer : MB-PKW

Engine : OM602A

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Cpening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80

: (1.65...1.85)

Rack travel in mm: 20.00...22.00

Firing order : 1-2-4-5-3

Phasing : 0-72-144-216-288

Tolerance $+ - \cdot : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 5.1...5.2

100 s: (5.0...5.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 315.0 Rack travel in mm : 4.9...5.1 Del.quantity cm3/ : 0.5...0.6 100 s: (0.4...0.8)

Spread cm3 : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1850

Del.quantity : 51.0...52.0 1000 : (50.0...53.0)

Spread cm3 : 2.50 1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.1...8.5

Speed rpm : 2500 4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000 Rack travel in mm : 1,7...1,8

LOW IDLE 1 Control lever

position degrees: 812 Setting point w/out bumper spring Speed rpm: 315 Rack travel in mm: 5.0 Testing: Speed rpm: 220 Minimum rack trave: 8.00 Speed rpm: 315 Rack travel in mm: 4.90\$.10 Rack travel in mm: 2.50 Speed rpm: 525625 Speed rpm: 1000 Maximum rack trave: 1.80	Del.quantity cm3/: 48.550.5 1000 s: (47.551.5) Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1050 Speed rpm : 1000 Del.quantity cm3/: 33.034.0 1000 s: (32.935.0) Spread cm3 : 2.50 1000 s: (3.00) STARTING FUEL DELIVERY
SET IDLE AUXILIARY SPRING Speed rpm : 380 Rack travel in mm : 4.204.40 : (4.104.50)	Speed rpm : 100 Del.quantity cm3/ : 52.00.0 1000 s: (52.00.0) Rack travel in mm : 20.100.00
TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 14.0014.10 2nd speed rpm : 1600 Rack travel in m: 13.3013.50 3rd speed rpm : 2200 Rack travel in m: 12.8013.00 Areiroid/Altitude Compensator Test	HIGH IDLE 1st version Aneroid pressure h: 1850 Speed
1st version Setting Speed rpm : 1000 Pressure hPa : 1600 Rack travel mm : 0.500.90 Measurement	LOW IDLE Speed rpm: 315 Rack travel in mm: 4.905.10 Del.quantity cm3/: 5.06.0 1000 s: (4.08.5) Spread cm3: 1.00 1000 s: (1.50)
Speed 1/min: 1000 1st pressure hPa: 1050 Rack travel in m: 3.904.10 2nd pressure hPa: 750 Rack travel in m: 5.806.20 FUEL DELIVERY CHARACTERISTICS	SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) Control lever at idle stop Speed rpm : 340 Rack travel in mm : (12.413.8) Del.quantity cm3/: - 1000 s: (41.049.0)
1st version Aneroid pressure h: 1850 Speed rpm : 1600 Del.quantity cm3/: 50.051.5 1000 s: (49.052.5) Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1850 Speed rpm : 2200	Current A : 1.8 Control lever at full-load stop Speed rpm : 2950 Rack travel in mm : 0.01.0 Current short-duration A : 3.0 Starting test Speed rpm : 100 Del.quantity cm3/: - min. 1000 s: 52.0 / 1,8A

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
—Control-lever position 49°, max.

0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 315 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1. Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Testing and adjusting the control-rod-travel sensor with evaluation circuit KDEP-P400
Receiving inspection
Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2,531...2,590 (2,502...2,620) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor
At a speed of 1000 1/min, set fuel delivery at 18,5...19,5 (17,5...20,5) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until U = 1.633...1.639 (1.635...1.637) V is indicated. Tighten fastening screws

with 1...2 Nm. Control lever to full-

load stop; voltage value of 2,531... 2,590 V must be attained.

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY -Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB : 29.10.92 Edition : 08.07.92 Replaces Test oil : ISO-4113 Combination no. : 0 400 075 966 Injection pump Pump designation : PES5M55C32ORS158 EP type number : 0 410 055 986 Governor Governor design. : RSF340/2300M64-11 Governer no. : 0 420 021 086 Cust. part no. : T4 Customer spec. information Customer : MB-PKW Engine : OM602A-Abgast. ALDA 1st version kW : 92.0 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 469 990 351 Inlet press., bar: 1.00 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values BEGINNING OF DELIVERY Test pressure, bar: 30...32 : 2.20...2.30 Prestroke mm : (2.15...2.35) MO4

Rack travel in mm : 20.00...22.00 Firing order : 1-2-4-5-3 Phasing : 0-72-144-216-288 Tolerance + - ° : 0.00 (1.00) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 1000Rack travel in mm : 13.90...14.00 Del.quantity cm3/ : 5.1...5.2 100 s: (5.0...5.3) Spread cm3 : 0.2100 s: (0.3) 2nd speed rpm : 315.0 Rack travel in mm : 5.4...5.6 Del.quantity cm3/: 0.5...0.6 100 s: (0.4...0.9) Spread cm3 : 0.1100 s: (0.15) FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1000 Aneroid pressure h: 1850 : 51.0...52.0 1000 : (50.0...53.0) Del.quantity : 2.50 Spread cm3 1000 : (3.00) RATED SPEED 1st version Control lever position degrees: 50...0 3rd rack travel in: 8.1...8.5 ripm : 2500 Speed 4th rack travel in: 2950 Speed rpm : 0.00...1.00SET IDLE CONTROL LEVER **POSITION** rom Rack travel in mm: 1,7...1,8

LOW IDLE 1

Control lever

Del.quantity cm3/: 48.5...50.5 1000 s: (47.5...51.5) position degrees: 8...12 Setting point w/out bumper spring : 315 rpm Speed Spread cm3 : 2.50 Rack travel in mm: 5.5 1000 s: (3.00) Aneroid pressure h: 1050 Speed rpm : 1000 Del.quantity cm3/ : 33.0...34.0 Testina: Speed mqn. : 220 Minimum rack trave: 8.00 1000 s: (32.0...35.0) : 315 Speed **FDIT** Spread cm3 : 2.50Rack travel in mm : 5.40...5.60 1000 s: (3.00) Rack travel in mm : 2.50 : 540...640 Speed rpm rpm : 1000 Speed STARTING FUEL DELIVERY Maximum rack trave: 1.80 SET IDLE AUXILIARY SPRING Speed : 100 וחכורו Speed rpm : 380 Del.quantity cm3/ : 52.0...0.0 Rack travel in mm: 4,2...4,4 1000 s: (52.0...0.0) : (4,1...4,5) Rack travel in mm : 20.10...0.00 TORQUE CONTROL HIGH IDLE Torque control curve - 1st version rpm : 1000 1st speed 1st version Rack travel in m: 13.90...14.90 Aneroid pressure h: 1850 2nd speed rpm : 1600 rpm : 2500 Speed Rack travel in m: 13.20...13.40 Rack travel in mm : 8.10...8.50 3rd speed rpm : 2200 Del.quantity cm3/: 29.0...33.0 Rack travel in m: 12.30...12.50 1000 s: (28.0...34.0) Spread cm3 : 2.50Aneroid/Altitude 1000 s: (3.00) Compensator Test LOW IDLE 1st version Speed rpm : 315
Rack travel in mm : 5.40...5.60 Setting Speed COM : 1000 Del.quantity cm3/ : 5.5...6.5 Pressure hPa : 1600 1000 s: (4.5...9.0) Rack travel mm : 0.50...0.90 cm3 : 1.00Spread 1000 s: (1.50) Measurement 1/min: 1000 Speed SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) 1st pressure hPa : 1050 Rack travel in m: 3.90...4.10 2nd pressure hPa : 750 Control lever at idle stop Rack travel in m: 5.80...6.20 rpm : 340 Speed Rack travel in mm : (12,4...13.8) FUEL DELIVERY CHARACTERISTICS Del.quantity cm3/:-1000 s: (41.0...49.0) Current A : 1,8 1st version Aneroid pressure h: 1850 Control lever at full-load stop rpm : 1600 : 2950 Speed Speed rpm Del.quantity cm3/: 50.0...51.5 Rack travel in mm: 0.0...1.0 1000 s: (49.0...52.5) Current cm3 : 2.50 1000 s: (3.00) Spread short-duration A: 3.0 Starting test Aneroid pressure h: 1850 Speed rpm : 100 Speed rom : 2200 Del.quantity cm3/:-1000 s: 52.0 / 1,8A

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
—Control—Lever position 49°, max.

0.2 mm control—red travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control—Lever position 46.5°, control—rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 315 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1. Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

CORRECTION OF INJECTED—FUEL QUANTITY—Set max. change plus/minus 0.75 mm control—rod travel at correction screw on ALDA pressure box.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet

: 29.10.92 Edition : 08.07.92 Replaces

fest oil : ISO-4113

Combination no. : 0 400 075 980

Injection pump

Pump designation : PES5M55C320RS158

EP type number : 0 410 055 986

Governor

Governor design. : RSF340/2300M64

: 0 420 021 050 Governer no.

Cust. part no. : T4

Customer-spec. information

Customer : MD-PKW

: 0M602A / ALDA Engine

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30

: (2.15...2.35)

Rack travel in mm : 20.00...22.00

Firing order : 1-2-4-5-3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 5.1...5.2

100 s: (5.0...5.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 315.0 Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 0.5...0.6

100 s: (0.4...8.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1850

Del.quantity : 51.0...52.0

1000 : (50.0...53.0)

: 2.50 Spread CIII3 1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.1...8.5

Speed rpm : 2500 4th rack travel in: 2950

Speed : 0.00...1.00 rom

SET IDLE CONTROL LEVER

POSITION

rpm : 1000

Rack travel in mm: 1.7...1.8

LOW IDLE 1

Control lever

position degrees: 8...12 Del.quantity cm3/: 48.5...50.5 1000 s: (47.5...51.5) Setting point wout bumper spring : 315 COM Spread cm3 : 2.50 Rack travel in mm: 5.5 1000 s: (3.00) Aneroid pressure h: 1050 Speed rpm : 1000 Del.quantity cm3/ : 33.0...34.0 1000 s: (32.0...35.0) Testing: Speed nom : 220 Minimum rack trave: 8.00 nom : 315 Speed Spread cm3 : 2.50Rack travel in mm: 5.40...5.60 Rack travel in mm: 2.50 1000 s: (3.00) : 540...640 Speed mom : 1000 Speed STARTING FUEL DELIVERY rpm Maximum rack trave: 1.80 SET IDLE AUXILIARY SPRING Speed rpm : 100 Del.quantity cm3/: 52.0...0.0 1000 s: (52.0...0.0) Rack travel in mm: 20.10...0.00 Speed nom : 380 Rack travel in mm : 4.20...4.40 : (4.10...4.50) TORQUE CONTROL HIGH IDLE Torque control curve - 1st version rpm : 1000 1st speed 1st version Rack travel in m: 13.90...14.00 Aneroid pressure h: 1850 2nd speed nom : 1600 rpm : 2500 Rack travel in m: 13.20...13.40 Rack travel in mm : 8.10...8.50 3rd speed rpm : 2200 Del.quantity cm3/: 29.0...33.0 Rack travel in m: 12.30...12.50 1000 s: (28.0...34.0) cm3 : 2.50 Spread Aneroid/Altitude 1000 s: (3.00) Compensator Test LOW IDLE 1st version Speed rpm : 315 Setting Rack travel in mm : 5.40...5.60 Speed : 1000 nom Del.quantity cm3/ : 5.5...6.5 Pressure hPa : 1600 1000 s: (4.5...9.0) Rack travel mm : 0.50...0.90 cm3 : 1.00Spread 1000 s: (1.50) Measurement 1/min: 1000 Speed SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) 1st pressure hPa : 1050 Rack travel in m: 3.90...4.10 2nd pressure hPa : 750 Control lever at idle stop Rack travel in m: 5.80...6.20 Speed rpm : 340 Rack travel in mm : (12.4...13.8) FUEL DELIVERY CHARACTERISTICS Del.quantity cm3/: -1000 s: (41.0...49.0) Current A : 1.8 1st version Aneroid pressure h: 1850 Control lever at full-load stop Speed rpm : 1600
Del.quantity cm3/: 50.0...51.5
1000 s: (49.0...52.5)
Spread cm3 : 2.50 : 2950 Speed rpm Rack travel in mm: 0.0...1.0 Current short-duration A: 3.0 1000 s: (3.00) Starting test Aneroid pressure h: 1850 rpm : 100 Speed Speed nom : 2200 Del.quantity cm3/: -1000 s: 52.0 / 1.8A

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.

3.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE —Control lever at idle stop.

With n = 315 1/min. and pu = 450 moar, control rod must move quickly to control—rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1. Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Testing and adjusting the control-rod-travel sensor with evaluation circuit KDEP-P400
Receiving inspection
Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.472...2.532 (2.442...2.562) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor
At a speed of 1000 1/min, set fuel delivery at 23.0...24.0 (22.0...25.0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until U = 1.633...1.639 (1.635...1.637) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-

load stop; voltage value of 2.472... 2.532 V must be attained.

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY -Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: MB 3.0 W37 Test sheet Edition : 29.10.92 Reolaces : 14.10.91 Test oil : ISO-4113

Combination no. : 0 400 076 956

Injection pump

Pump designation : PES6M55C32URS181 EP type number : 0 410 056 983

Governor

Governor design. : RSF305/2125M64-20

Governer no. : 0 420 021 168

Cust. part no. : T4

Customer-spec. information Customer : MD-PKW

: DMGJ3A D35 USA Engine

1st version kW : 110.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80

: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - * : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 14.10...14.20

Del.quantity cm3/: 5.9...6.0

100 s: (5.8...6.1)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 280.0

Rack travel in mm : -

Del.quantity cm3/: 0.5...0.6

100 s: (0.5...0.9)

cm3 : 0.1Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 1900

: 59.0...60.0 Del.quantity

1000 : (58.0...61.0)

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 9.2...9.6

Speed rpm : 2500 4th rack travel in: 2700

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

rpm

Rack travel in mm: 1,9...2,0

LOW IDLE 1

Control Lever

position degrees: 8...12 Aneroid pressure h: 1050 Setting point w/out bumper spring : 1000 rom Speed Del.quantity cm3/: 38.0...39.0 mpm : 280 1000 s: (37.0...40.0) cm3 : 2.50 Testina: Spread 1000 s: (3.00) Speed rpm : 200 Minimum rack trave: 8.00 Rack travel in mm : 2,5 Speed rpm : 550...650 STARTING FUEL DELIVERY Speed : 1000 rpm Maximum rack trave: 2.00 rpm : 100 Speed SET IDLE AUXILIARY SPRING Del.quantity cm3/ : 52.0...0.0 : 400 Speed 1000 s: (52.0...0.0) וחכרו Rack travel in mm: 4.3...4.5 Rack travel in mm : 20.10...0.00 : (4.2...4.6) HIGH IDLE TORQUE CONTROL Torque control curve - "1st version 1st version 1st speed rpm : 1000 Aneroid pressure h: 1900 Rack travel in m: 14.10...14.20 Speed rpm : 2300 Rack travel in mm : 9.20...9.60 nd speed rpm : 1600 Rack travel in m: 13.20...13.20 2nd speed Del.quantity cm3/: 37.0...41.0 3rd speed rpm : 2000 1000 s: (36.0...42.0) Rack travel in m: 12.20...12.50 cm3 : 2.50Spread 1000 s: (3.00) Aneroid/Altitude Compensator Test LOW IDLE rpm : 280 Speed 1st version Rack travel in mm : -Setting Del.quantity cm3/ : 5.5...6.5 Speed rpm : 1000 1000 s: (5.0...9.5) Pressure hPa : 1600 cm3 : 1.00Spread : 0.80...1.20 Rack travel mm 1000 s: (1.50) Measurement SETTING/TESTING ELECTRONIC IDLE 1/min : 1000 Speed REGULATION (ELR) 1st pressure hPa : 1050 Rack travel in m: 3.70...3.90 2nd pressure hPa : 750 Control lever at idle stop rpm : 305 Rack travel in mm : (11.5...12.9) Rack travel in m: 5.20...5.60 Del.quantity cm3/: -FUEL DELIVERY CHARACTERISTICS 1000 s: (41.0...49.0) Current A 1st version Control lever at full-load stop Aneroid pressure h: 1900 rpm : 2700 : 1600 Rack travel in mm: 0.0...1.0 **m**du Del.quantity cm3/: 56.5...58.0 Current 1000 s: (55.5...59.0) short-duration A: 3,0 : 2.50 Spread cm3 Starting test 1000 s: (3.0) Speed : 100 rpm Aneroid pressure h: 1900 Del.quantity cm3/: -: 2000 Speed 1000 s: 52.0 / 1.8A rpm min. Del.quantity cm3/: 54.0...56.0 1000 s: (53.0,...57.0) Remarks: Spread cm3 : 2.50

1000 s: (3.00)

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 35,5°, max.

0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

-Control-lever position 33.0°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX -Control lever up against idle stop. At n = 290 1/min and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY -Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

Testing and adjusting the control-rodtravel sensor with evaluation circuit KDEP-P400

Receiving inspection
Shift control lever to full-load stop.
Set 13.5 V at stabilizer. Apply
1850 hPa to ALDA. Run up to speed of
1000 1/min; a voltage of 2.487...2.547
(2.457...2.577) V must be displayed
on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 24.0...25.0 (23.0...26.0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until U = 1.633...1.639 (1.635...1.637) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 2.487... 2.547 V must be attained.

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 16.8°...17.2° (16.7...17.3°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Sliding sleeve pre-travel = 5,25...5,75 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 3.0 W38 : 29.10.92 Test sheet Edition Replaces : 14.10.91 Test oil : ISO-4113 Combination no. : 0 400 076 958 Injection pump Pump designation : PES6M55C32ORS181 EP type number : 0 410 056 983 Governor Governor design. : RSF315/2125M64-19 : 0 420 021 162 Governer no. Cust, part no. : T4 Customer-spec, information Customer : MB-PKW Engine : 0M603A D35 USA 1st version kW : 110.0 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 469 990 351 Inlet press., bar: 1.00 Test nozzle holder : 0 681 343 009 assembly Openina pressure, bar : 172...175 Test lines : 1 680 750 014 Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 30...32 : 1.70...1.80 Prestroke mm : (1.65...1.85) M13

Rack travel in mm : 20.00...22.00 Firing order : 1-5-3-6-2-4 Phasina : 0-60-120-180-240-300 Tolerance + - * : 0.00 (1.00) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1000 Rack travel in mm : 14,10...14,20 Det.quantity cm3/ : 5.9...6.0 100 s: (5.8...6.1) Spread cm3 : 0.2100 s: (0.3) 2nd speed rpm : 290.0 Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 0.5...0.6 100 s: (0.5...0.95) Spread cm3 : 0.1100 s: (0.15) FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1000 Speed Aneroid pressure h: 1900 : 59.0...60.0 Del.quantity 1000 : (58.0...61.0) : 2.50 Spread cm3 1000 : (3.00) RATED SPEED 1st version Control lever position degrees: 50...0 3rd rack travel in: 9.2...9.6 Speed : 2300 mq7 4th rack travel in: 2700 Speed : 0.00...1.00 L DW SET IDLE CONTROL LEVER POSITION : 1000 rpm

Rack travel in mm : 1.9...2.0

LOW IDLE 1

Control Lever

position degrees: 812 Setting point w/out bumper spring Speed rpm : 290 Rack travel in mm : 5.6	Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1050 Speed rpm : 1000 Del.quantity cm3/: 38.039.0
Testing: Speed rpm : 200 Minimum rack trave: 8.00 Rack travel in mm : 2,5 Speed rpm : 550650	1000 s: (37.040.0) cm3 : 2.50 1000 s: (3.00)
Speed rpm : 1000 Maximum rack trave: 2.00	STARTING FUEL DELIVERY
SET IDLE AUXILIARY SPRING Speed rpm : 400 Rack travel in mm : 4.34.5 : (4.24.6)	Speed rpm : 100 Del.quantity cm3/: 52.00.0 1000 s: (52.00.0) Rack travel in mm : 20.100.00
TORQUE CONTROL Torque control curve - 1st version	HIGH IDLE
1st speed rpm : 1000 Rack travel in m: 14.1014.20 2nd speed rpm : 1603 Rack travel in m: 13.2013.20 3rd speed rpm : 2000 Rack travel in m: 12.2012.50	1st version Aneroid pressure h: 1900 Speed rpm : 2300 Rack travel in mm : 9.209.60 Del.quantity cm3/: 37.041.0 1000 s: (36.042.0) Spread cm3 : 2.50
Aneroid/Altitude Compensator Test	1000 s: (3.00)
1st version Setting Speed rpm : 1000 Pressure hPa : 1600 Rack travel mm : 0.801.20	Speed rpm : 290 Rack travel in mm : 5.505.70 Del.quantity cm3/: 5.56.5 1000 s: (5.09.5) Spread cm3 : 1.00 1000 s: (1.50)
Measurement Speed 1/min: 1000	SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)
1st pressure hPa : 1050 Rack travel in m: 3.703.90	
2nd pressure hPa : 750 Rack travel in m: 5.205.60 FUEL DELIVERY CHARACTERISTICS	Control lever at idle stop Speed rpm : 315 Rack travel in mm : (11.512.9) Del.quantity cm3/: - 1000 s: (41.049.0)
1st version	Current A : 1.8
Aneroid pressure h: 1900 Speed rpm : 1600 Del.quantity cm3/: 56.558.0 1000 s: (55.559.0)	Control lever at full-load stop Speed rpm : 2700 Rack travel in mm : 0.01.0 Current
Spread cm3 : 2.50 1000 s: (3.0)	short-duration A: 3.0 Starting test
Aneroid pressure h: 1900 Speed rpm : 2000 Del.quantity cm3/: 54.056.0 1000 s: (53.057.0)	Speed rpm: 100 Del.quantity cm3/:- min. 1000 s: 52.0 1.8A Remarks:
	1. Weiligi 163.

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
—Control—lever position 35,5°, max.

D.2 mm control—rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

-Control-lever position 33.0°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 290 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 16.8°...17.2° (16.7...17.3°) angular displacement of cam following start of delivery of cylinder no. 1.

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY -Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

Testing and adjusting the control-rodtravel sensor with evaluation circuit KDEP-P400

Receiving inspection
Shift control lever to full-load stop.
Set 13.5 V at stabilizer. Apply
1850 hPa to ALDA. Run up to speed of
1000 1/min; a voltage of 2.487...2.547
(2.457...2.577) V must be displayed
on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 24.0...25.0 (23.0...26.0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until U = 1.633...1.639 (1.635...1.637) V is indicated. Tighten fastening screws

with 1...2 Nm. Control lever to full-load stop; voltage value of 2.487... 2.547 V must be attained.

Sliding sleeve pre-travel = 5,25...5,75 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 3.0 W39 : 29.10.92 Edition Replaces : 14,10,91 Test oil : ISO-4113 Combination no. : 0 400 076 959 Injection numb Pump designation : PES6M55C32ORS180 EP type number : 0 410 056 984 Governor Governor design. : RSF315/2300M64-17 : 0 420 921 157 Governer no. : T4 Cust, part no. Customer-spec. information Customer : MB-PKW Engine : 0M603A-D/A (KAT) 1st version kW : 110.0 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 469 990 351 Inlet press., bar: 1.00 Test nozzle holder assembly : 0 681 343 009 **Opening** pressure, bar : 172...175 Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

: 1.70...1.80

: (1.65...1.85)

per values

Prestroke mm

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Rack travel in mm : 20.00...22.00 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - * : 0.00 (1.00) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1000 Rack travel in mm : 13.70...13.80 Del.quantity cm3/: 5.1...5.2 100 s: (5.0...5.3) Spread cm3 : 0.2100 s: (0.3) 2nd speed rpm : 290.0Rack travel in mm: 5.4...5.6 Del.quantity cm3/: 0.5...0.6 100 s: (0.5...0.95) Spread cm3 : 0.1100 s: (0.15) FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1000 Aneroid pressure h: 1850 Del.quantity : 51.0...52.0 1000 : (50.0...53.0) : 2.50 Spread cm3 1000 : (3.00) RATED SPEED 1st version Control lever position degrees: 50...0 3rd rack travel in: 8.4...8.8 rpm : 2500 Speed 4th rack travel in: 2950 rpm : 0.00...1.00Speed SET IDLE CONTROL LEVER POSITION rpm : 1000 Rack travel in mm: 1.7...1.8 LOW IDLE 1 Control lever

position degrees: 812 Setting point w/out bumper spring Speed rpm : 290 Rack travel in mm : 5.5 Testing: Speed rpm : 200 Minimum rack trave: 7.00 Speed rpm : 290 Rack travel in mm : 5.405.60 Rack travel in mm : 2.50 Speed rpm : 520620 Speed rpm : 1000 Maximum rack trave: 1.80	Del.quantity cm3/: 48.550.5 1000 s: (47.551.5) Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1050 Speed rpm : 1000 Del.quantity cm3/: 33.034.0 1000 s: (32.035.0) Spread cm3 : 2.50 1000 s: (3.00) STARTING FUEL DELIVERY
SET IDLE AUXILIARY SPRING Speed rpm : 360 Rack travel in mm : 4.24.4 : (4.14,5)	Speed rpm : 100 Del.quantity cm3/ : 52.00.0 1000 s: (52.00.0) Rack travel in mm : 20.100.00
TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 13.7013.80 2nd speed rpm : 1600 Rack travel in m: 13.0013.20 3rd speed rpm : 2200 Rack travel in m: 12.2012.40 Aneroid/Altitude Compensator Test	1st version Aneroid pressure h: 1850 Speed rpm : 2500 Rack travel in mm : 8.408.80 Del.quantity cm3/ : 29.033.0 1000 s: (28.034.0) Spread cm3 : 2.50 1000 s: (3.00)
	LOW IDLE
1st version Setting Speed rpm : 1000 Pressure hPa : 1600 Rack travel mm : 0.300.70	Speed rpm : 290 Rack travel in mm : 5.405.60 Del.quantity cm3/ : 5.56.5 1000 s: (5.09.5) Spread cm3 : 1.00 1000 s: (1.50)
Measurement Speed 1/min : 1000	SETTING/TESTING ELECTRONIC IDLE
1st pressure hPa : 1050 Rack travel in m: 3.403.60 2nd pressure hPa : 750 Rack travel in m: 4.905.30 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1850 Speed rpm : 1600	REGULATION (ELR) Control lever at idle stop Speed rpm : 315 Rack travel in mm : (13.114.5) Del.quantity cm3/: - 1000 s: (43.051.0) Current A : 1.8 Control lever at full-load stop Speed rpm : 100
Del.quantity cm3/: 50.051.5 1000 s: (49.052.5) Spread cm3 : 2.50 1000 s: (3.0) Aneroid pressure h: 1850 Speed rpm : 2200	Rack travel in mm: 0.01.0 Current short-duration A: 3.0 Starting test Speed rpm: 100 Del.quantity cm3/: - min. 1000 s: 52.0 1.8A

Remarks:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 250 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
—Control—lever position 35,5°, max.

0.2 mm control—rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
—Control—lever position 33.0°, control—rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 16.8°...17.2° (16.7...17.3°) angular displacement of cam following start of delivery of cylinder no. 1.

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED—FUEL QUANTITY—Set max. change plus/minus 0.75 mm control—rod travel at correction screw on ALDA pressure box.

Testing and adjusting the control-rodtravel sensor with evaluation circuit KDEP-P400 Receiving inspection Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.457...2.517 (2.427...2.547) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 21.0...22.0 (20.0...23.0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until U = 1.633...1.639 (1.635...1.637) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 2.457... 2.517 V must be attained.

Note remarks

: MB 3.0 W28 : 29.10.92 Test sheet Edition Replaces : 14.10.91

Test oil : ISO-4113

Combination no. : 0 400 076 962

Injection pump

Pump designation : PES6M55C320RS157 EP type number : 0 410 056 993

Governor

Governor design. : RSF315/2300M64-15

Governer no. : 0 420 021 143

Cust. part no. : T4

Customer-spec. information : MB-PKW Customer

: OM603A-Abgast. Engine

1st version kW : 110.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30

: (2.15,...2.35)

Rack travel in mm : 20.00...22.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + ~ * : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 5.1...5.2

100 s: (5.0...5.3)

cm3 : 0.2Spread

100 s: (0.3)

rpm : 290.0 2nd speed

Rack travel in mm: 5.3...5.5 Del.quaritity cm3/: 0.5...0.6

100 s: (0.5...0.95)

cm3 : 0.1Spread

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 1850

Del.quantity : 51.0...53.0)

cm3 : 2.50 1000 : (3.00) Spread

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 8.1...8.5

rpm : 2500 Speed

4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER POSITION

rpm : 1000

Rack travel in mm: 1,7...1,8

LOW IDLE 1 Control lever

position degrees: 812 Setting point w/out bumper spring Speed rpm : 290 Rack travel in mm : 5.4 Testing: Speed rpm : 200 Minimum rack trave: 7.00 Speed rpm : 290 Rack travel in mm : 5.305.50 Rack travel in mm : 2.50 Speed rpm : 510610 Speed rpm : 1000	Del.quantity cm3/: 48.550.5 1000 s: (47.551.5) Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1050 Speed rpm : 1000 Del.quantity cm3/: 33.034.0 1000 s: (32.035.0) Spread cm3 : 2.50 1000 s: (3.00) STARTING FUEL DELIVERY
Maximum rack trave: 1.80 SET IDLE AUXILIARY SPRING Speed rpm : 360 Rack travel in mm : 4.24.4 : (4.14.5)	Speed rpm : 100 Del.quantity cm3/: 52.00.0 1000 s: (52.00.0) Rack travel in mm : 20.100.00
TORQUE CONTROL Torque control curve — 1st version 1st speed rpm : 1000 Rack travel in m: 13.9014.00 2nd speed rpm : 1600 Rack travel in m: 13.1013.30 3rd speed rpm : 2200 Rack travel in m: 12.3012.50 Aneroid/Altitude Compensator Test	HIGH IDLE 1st version Aneroid pressure h: 1850 Speed rpm : 2500 Rack travel in mm : 8.108.50 Del.quantity cm3/: 29.033.0 :000 s: (28.934.0) Spread cm3 : 2.50 1000 s: (3.00)
1st version Setting Speed rpm : 1000 Pressure hPa : 1600 Rack travel mm : 0.500.90	LOW IDLE Speed rpm : 290 Rack travel in mm : 5.305.50 Del.quantity cm3/ : 5.56.5 1000 s: (5.09.5) Spread cm3 : 1.00 1000 s: (1.50)
Measurement Speed 1/min: 1000 1st pressure hPa: 1050 Rack travel in m: 3.904.20 2nd pressure hPa: 750 Rack travel in m: 5.706.10	SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) Control lever at idle stop Speed rpm : 315
1st version Aneroid pressure h: 1850 Speed rpm : 1600 Del.quantity cm3/: 50.051.5	Rack travel in mm: (12.614.0) Del.quantity cm3/: - 1000 s: (41.049.0) Current A: 1,8 Control lever at full-load stop Speed rpm: 100 Rack travel in mm: 0.01.0
1000 s: (49.052.5) Spread cm3 : 2.50	Current short-duration A: 3.0 Starting test Speed rpm: 100 Del.quantity cm3/:- min. 1000 s: 52.0 1.8A

Remarks:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
—Control—lever position 35,5°, max.

0.2 mm control—rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
—Control—lever position 33.0°, control—rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX -Control lever up against idle stop. At n = 290 1/min and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1.
Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY -Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

Testing and adjusting the control-rod-travel sensor with evaluation circuit KDEP-P400

Receiving inspection

Shift control lever to full-load stop.

Set 13.5 V at stabilizer. Apply
1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.472...2.532 (2.442...2.562) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor
At a speed of 1000 1/min, set fuel

delivery at 23.0...24.0 (22.0...25.0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until U = 1.633...1.639 (1.635...1.637) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 2.472... 2.532 V must be attained.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : 29.10.92 Edition : 01.09.92 Replaces Test oil : ISO-4113 Combination no. : 0 400 076 968 Injection pump Pump designation : PES6M55C32ORS178 EP type number : 0 410 056 986 Governor Governor design: : RSF315/2125M64-13 Governer no. : 0 420 021 128 Cust. part no. : T4 Customer-spec, information Customer : MB-PKW : OM603A D35 USA ALDA Engine 1st version kW : 100.0 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 469 990 351 Inlet press., bar: 1.00 Test nozzle holder assembly : 0 681 343 009 Openina : 172...175 pressure, bar Test Lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values BEGINNING OF DELIVERY Test pressure, bar: 30...32 Prestroke mm : 1.70...1.80 : (1.65...1.85) M22

Rack travel in mm : 20.00...22.00 : 1-5- 3- 6- 2- 4 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.60 (1.00) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 1000Rack travel in um : 13.70...13.30 Del.quantity cm3/: 5.8...5.9 100 s: (5.7...6.0) Spread cm3 : 0.2100 s: (0.3) 2nd speed rpm : 290.0 Rack travel in mm: 5.6...5.9 Del.quantity cm3/: 0.5...0.6 100 s: (0.5...0.9) cm3 : 0.1 Spread 100 s: (0.1) FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1000 Speed Aneroid pressure h: 1850 Del.quantity : 30.0...60.0) : 2.50 Spread cm3 1000 : (3.00) RATED SPEED

1st version Control lever position degrees: 50...0 3rd rack travel in: 6.5...6.9 Speed rpm : 2300 4th rack travel in: 2700 Speed : 0.00...1.00 rpm SET IDLE CONTROL LEVER

POSITION

: 1000 rpm Rack travel in mm: 1,4...1,5

LOW IDLE 1 Control lever

position degrees: 8...12 Spread cm3 : 2.50Setting point w/out bumper spring 1000 s: (3.00) rpm : 290 Aneroid pressure h: 1050 Rack travel in mm: 5.7 Speed rpm : 1000 Del.quantity cm3/ : 38.0...39.0 Testina: 1000 s: (37.0...40.0) Speed : 200 cm3 : 2.50 man Spread Minimum rack trave: 7.00 1000 s: (3.00) mar : 290 Rack travel in mm : 5.60...5.90 : 1000 Speed mom STARTING FUEL DELIVERY Maximum rack trave: 1.50 SET IDLE AUXILIARY SPRING Speed rpm : 100 rpm : 400 Speed Del.quantity cm3/ : 52.0...0.0 Rack travel in mm : 3,60...4,10 1000 s: (52.0...0.0) : (3,50...4,20) Rack travel in mm : 20.10...0.00 TORQUE CONTROL HIGH IDLE Torque control curve - 1st version 1st speed rpm : 1000 1st version Rack travel in m: 13.70...13.80 Aneroid pressure h: 1850 2nd speed rpm : 1600
Rack travel in m: 12.70...12.90
3rd speed rpm : 2000
Rack travel in m: 11.30...11.50 rpm : 2300 Rack travel in mm : 6.50...6.90 Del.quantity cm3/ : 22.0...26.0 1000 s: (21.0...27.0) Spread cm3 : 2.50 Aneroid/Altitude 1000 s: (3.00) Compensator Test LOW IDLE 1st version Speed rpm : 290 Rack travel in mm : 5.60...5.90 Setting Speed : 1000 MCT Del.quantity cm3/ : 5.5...6.5 Pressure hPa : 1600 1000 s: (5.0...9.5) : 0.40...0.80 Rack travel mm cm3 : 1.00 Spread 1000 s: (1.50) Measurement Speed 1/min: 1000 SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) 1st pressure hPa : 1050 Rack travel in m: 3.50...3.70 2nd pressure hPa : 750 Control lever at idle stop Rack travel in m: 5.00...5.40 : 315 Speed rpm Rack travel in mm : (11,7...13,1) FUEL DELIVERY CHARACTERISTICS Del.quantity cm3/: -1000 s: (41,0...49,0) : 1,8 Current A 1st version Aneroid pressure h: 1850 Control lever at full-load stop Speed : 1600 rom : 2700 rpm Del.quantity cm3/: 54.5...56.0 Rack travel in mm: 0,0...1,0 1000 s: (53.5...57.0) Current cm3 : 2.50Spread short-duration A: 3,0 1000 s: (3.0) Starting test Aneroid pressure h: 1850 rpm Speed : 100 Speed rpm : 2000 Del.quantity cm3/ : 49.0...51.0 1000 s: (48.0...52.0) Del.quantity cm3/: -min. 1000 s: 52,0 1,8A Remarks:

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1877 = 16.8°...17.2° (16.7...17.3°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

CORRECTION OF INJECTED-FUEL QUANTITY
-Set max. change plus/minus 0.75 mm
control-rod travel at correction
screw on ALDA pressure box.

Sliding sleeve pre-travel = 5.5 mm

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 44,5° max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
-Control-lever position 42,0°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop. At n = 290 1/min and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm

Note remarks

Test sheet

Fdition : 29,10,92 : 08.07.92 Replaces

: ISO-4113 Test oil

Combination no. : 0 400 076 980

Injection pump

Pump designation : PES6M55C32DRS157 EP type number : 0 410 056 993

Governor

Governor design.: RSF315/2300M64-10

Governer no. : 0 420 021 085

Cust. part no. : T4

Customer-spec. information Customer : MB-PKW

: OM603A / ALDA Engine

1st version kW : 110.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30

: (2.15...2.35)

Rack travel in mm : 20.00...22.00

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm: 13.90...14.00

Del.guantity cm3/: 5.1...5.2

100 s: (5.0...5.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 290.0 Rack travel in am : 5.3...5.5 Del.quantity cm3/: 0.5...0.6

100 s: (0.5...0.9)

Spread cm3 : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 1000 Aneroid pressure h: 1850

: 51.0...52.0 Del.quantity

1000 : (50.0...53.0) cm3 : 2.50

Spread 1000 : (3.00)

RATED SPEED

1st version

Control Lever

position degrees: 50...0 3rd rack travel in: 8.1...8.5

rpm : 2500 Speed 4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

rpm Rack travel in mm: 1.7...1.8

LOW IDLE 1 Control Lever

position degrees: 812 Setting point w/out bumper spring Speed rpm : 290 Rack travel in mm : 5.4	Del.quantity cm3/: 48.550.5 1000 s: (47.551.5) Spread cm3 : 2.50 1000 s: (3.00)
Testing: Speed rpm : 200 Minimum rack trave: 7.00 Speed rpm : 290 Rack travel in mm : 5.305.50 Rack travel in mm : 2.50 Speed rpm : 510610	Aneroid pressure h: 1050 Speed rom: 1000 Del.quantity cm3/: 33.034.0 1000 s: (32.035.0) Spread cm3: 2.50 1000 s: (3.00)
Speed rom : 1000 Maximum rack trave: 1.80	STARTING TUEL DELIVERY
SET IDLE AUXILIARY SPRING Speed rpm : 360 Rack travel in mm : 4,24,4 : (4,14,5)	Speed rpm : 100 Del.quantity cm3/ : 52.00.0 1000 s: (52.00.0) Rack travel in mm : 20.100.00
TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 13.9014.00 2nd speed rpm : 1600 Rack travel in m: 13.2013.40 3rd speed rpm : 2203 Rack travel in m: 12.3012.50	HIGH IDLE 1st version Aneroid pressure h: 1850 Speed rpm : 2500 Rack travel in mm : 8.108.50 Del.quantity cm3/: 29.033.0 1000 s: (28.034.0) Spread cm3 : 2.50
Aneroid/Altitude Compensator Test	1000 s: (3.00)
1st version Setting Speed rpm : 1000 Pressure hPa : 1600 Rack travel mm : 0.500.90	Speed rpm: 290 Rack travel in mm: 5.305.50 Del.quantity cm3/: 5.56.5 1000 s: (5.09.5) Spread cm3: 1.09 1000 s: (1.50)
Measurement Speed 1/min: 1000	SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)
1st pressure ma : 1050 Rack travel in m: 3.904.10 2nd pressure hPa : 750 Rack travel in m: 5.806.20 FUEL DELIVERY CHARACTERISTICS	Control lever at idle stop Speed rpm : 315 Rack travel in mm : (12.814.2) Del.quantity cm3/:- 1000 s: (42.049.9) Current A : 1.8
1st version Aneroid pressure h: 1850 Speed rpm : 1600 Del.quantity cm3/: 50.051.5	Control lever at full-load stop Speed rpm : 2950 Rack travel in mm : 0.01.0 Current short-duration A : 3.0 Starting test Speed rpm : 100 Del.quantity cm3/:- min. 1000 s: 52.0 / 1.8A

Remarks:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
—Control—lever position 49°, max.

0.2 mm control—rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control—lever position 46.5°, control—rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 290 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1. Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Testing and adjusting the control-rod-travel sensor with evaluation circuit KDEP-P400
Receiving inspection
Shift control lever to full-load stop.
Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.472...2.532 (2.442...2.562) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor
At a speed of 1000 1/min, set fuel delivery at 23.0...24.0 (22.0...25.0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until U = 1.633...1.639 (1.635...1.637) V is

indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 2.472... 2.532 V must be attained.

Pin projection = 16.60...16.70 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB Edition : 29.10.92 Replaces : 08.07.92 Test oil : ISO-4113 Combination nc. : 0 400 076 987 Injection pump Pump designation : PES6M55C32ORS157 EP type number : 0 410 056 993 Governor Governor design. : RSF315/2300M64-2 Governer no. : 0 420 021 059 Cust. part no. : T4 Customer-spec, information Customer : MB-PKW Engine : OM603A / ALDA 1st version kW : 110.0 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 469 990 351 Inlet press., bar: 1.00 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test Lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 30...32 : 2.20...2.30 Prestroke mm : (2.15...2.35)

Rack travel in mm : 20.00...22.00 : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - * : 0.00 (1.00) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 1000Rack travel in mm : 13.90...14.00 Del.quantity cm3/: 5.1...5.2 100 s: (5.0...5.3) Spread cm3 : 0.2 100 s: (0.3) 2nd speed rom : 290.0 Rack travel in mm : 5.3...5.5 Del.quantity cm3/: 0.5...0.6 100 s: (0.5...0.9) cm3 : 0.1 Spread 100 s: (0.15) FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1000 Aneroid pressure h: 1850 Del.quantity : 51.0...52.0 1000 : (50.0...53.0) : 2.50 Spread cm3 1000 : (3.00) RATED SPEED 1st version Control Lever position degrees: 50...0 3rd rack travel in: 8.1...8.5 Speed r/om : 2500 4th rack travel in: 2950 : 0.00...1.00 Speed rpm SET IDLE CONTROL LEVER **POSITION** rpm : 1000 Rack travel in mm: 1.7...1.8 LOW IDLE 1

Control Lever

position degrees: 8...12 Del.quantity cm3/: 48.5...50.5 Setting point w/out bumper spring 1000 s: (47.5...51.5) Speed rom : 290 cm3 : 2.50Spread 1000 s: (3.00) Aneroid pressure h: 1050 Rack travel in mm: 5.4 Speed rpm : 1000 Del.quantity cm3/ : 33.0...34.0 1000 s: (32.0...35.0) Testing: Speed rpm : 200 Minimum rack trave: 7.00 Speed rpm: 290
Rack travel in mm: 5.30...5.50
Rack travel in mm: 2.50
Speed rpm: 510...610 cm3 : 2.50 Spread 1000 s: (3.00) Speed rpm : 1000 STARTING FUEL DELIVERY Maximum rack trave: 1.80 SET IDLE AUXILIARY SPRING Speed rpm : 100 Del.quantity cm3/: 52.0...0.0 1000 s: (52.0...0.0) irpm : 360 Speed Rack travel in mm : 4.20...4.40 : (4.10...4.50) Rack travel in mm : 20.10...0.00 TORQUE CONTROL HIGH IDLE Torque control curve - 1st version 1st speed rpm : 1000 1st version Rack travel in m: 13.90...14.00 nd speed rpm : 1600 Rack travel in m: 13.20...13.40 Aneroid pressure h: 1850 2nd speed Speed : 2500 rpm Rack travel in mm : 8.10...8.50 3nd speed rpm : 2200 Del.quantity cm3/: 29.0...33.0 Rack travel in m: 12.30...12.50 1600 s: (28.0...34.0) Spread cm3 : 2.50Aneroid/Altitude 1000 s: (3.00) Compensator Test LOW IDLF Speed rpm : 290
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 5.5...6.5
1000 s: (5.0...9.5) 1st version Setting Speed : 1000 rom Pressure : 1600 hPa : 0.50...0.90 Rack travel mm cm3 : 1.00 Spread 1000 s: (1.50) Measurement 1/min: 1000 Speed SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) 1st pressure hPa : 1050 Rack travel in m: 3.90...4.10 2nd pressure hPa : 750 Control lever at idle stop Rack travel in m: 5.80...6.20 rpm : 315 Rack travel in mm : (12.8...14.2) FUEL DELIVERY CHARACTERISTICS Del.quantity cm3/: -1000 s: (42.0...49.0) Current A 1st version Aneroid pressure h: 1850 Control lever at full-load stop Speed : 1600 rpm : 2950 **MCL** Speed Del.quantity cm3/: 50.0...51.5 Rack travel in mm: 0.0...1.0 1000 s: (49.0...52.5) Current : 2.50 Spread cm3short-duration A: 3,0 1000 s: (3.00) Starting test Aneroid pressure h: 1850 Speed rpm : 100 Del.quantity cm3/: -min. 1000 s: 52.0 Speed rom : 2200

Remarks:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
—Control—lever position 49°, max.

0.2 mm control—rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control—lever position 46.5°, control—rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 290 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEF 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1. Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Testing and adjusting the control-rod-travel sensor with evaluation circuit KDEP-P400
Receiving inspection
Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.472...2.532 (2.442...2.562) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor
At a speed of 1000 1/min, set fuel delivery at 23.0...24.0 (22.0...25.0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until U = 1.633...1.639 (1.635...1.637) V is

indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 2.472... 2.532 V must be attained.

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY -Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

Note remarks

Test sheet : MB

Edition : 30.10.92 Replaces : 08.07.92

Test oil : ISO-4113

Combination no. : 0 400 076 992

Injection pump

Pump designation : PES6M55C32ORS157 EP type number : 0 410 056 993

Governor

Governor design. : RSF315/2300M64 Governor no. : 0 420 021 044

Cust. part no. : T4

Customer-spec. information Customer : MB-PKW

Engine : OM603A / ALDA

1st version kW : 110.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0.681,343,009

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30

: (2.15...2.35)

Rack travel in mm : 20.00...22.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \cdot : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 5.1...5.2

100 s: (5.0...5.3)

Spread cm3: 0.2

100 s: (0.3)

2nd speed rpm : 290.0

Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 0.5...0.6

100 s: (0.5...0.9)

Spread cm3 : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del.quantity : 51.0...52.0 1000 : (50.0...53.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control Lever

position degrees: 50...0

3rd rack travel in: 8.1...8.5

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm: 1.7...1.8

LOW IDLE 1 Control lever

NO3

position degrees: 8...12 Del.quantity cm3/: 48.5...50.5 1000 s: (47.5...51.5) Setting point w/out bumper spring Speed rom : 290 cm3 : 2.50 Spread Rack travel in mm: 5.4 1000 s: (3.00) Aneroid pressure h: 1050 Testing: C001: man Speed Del.quantity cm3/: 33.0...34.0 1000 s: (32.0...35.0) Speed : 200 rpm Minimum rack trave: 7.00 rpm : 290 cm3 : 2.50 Spread Rack travel in mm : 5.30...5.50 1000 s: (3.00) Rack travel in nm: 2.50 : 510...610 Speed rom rpm : 1000 Speed STARTING FUEL DELIVERY Maximum rack trave: 1.80 Speed rpm : 100 Del.quantity cm3/ : 52.0...0.0 1000 s: (52.0...0.0) SET IDLE AUXILIARY SPRING rpm : 360 Speed Rack travel in mm : 4.20...4.40 : (4.10...4.50) Rack travel in mm : 20.10...0.00 TORQUE CONTROL HIGH IDLE Torque control curve - 1st version rpm : 1000 1st speed 1st version Rack travel in m: 13.90...14.00 Aneroid pressure h: 1850 rpm : 1600 2nd speed Speed rpm : 2500 Rack travel in m: 13.20...13.40 Rack travel in mm : 8.10...8.50 3rd speed rpm : 2200 Del.quantity cm3/: 29.0...33.0 1000 s: (28.0...34.0) Rack travel in m: 12.30...12.50 cm3 : 2.50 Spread Aneroid/Altitude 1000 s: (3.00) Compensator Test LOW IDLE Speed rpm : 290
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 5.5...6.5
1000 s: (5.0...9.5) 1st version Settina Speed COM : 1000 hPa : 1600 Pressure kack travel nm : 0.50...0.90 cm3 : 1.00 Spread 1000 s: (1.50) Measurement 1/min: 1000 Speed SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) 1st pressure hPa : 1050 Rack travel in m: 3.90...4.10 2nd pressure hPa : 750 Control lever at idle stop Speed rpm : 315 Rack travel in mm : (12.8...14.2) Rack travel in m: 5.80,...6.20 Del.quantity cm3/: -1000 s: (42.0...49.0) FUEL DELIVERY CHARACTERISTICS Current A 1st version Ameroid pressure h: 1850 Control lever at full-load stop rpm : 1600 Speed rpm : 2950 Del.quantity cm3/: 50.0...51.5 1000 s: (49.0...52.5) Rack travel in mm: 0.0...1.0 Current cm3 : 2.50 Spread short-duration A: 3,0 1000 s: (3.00) Starting test Aneroid pressure h: 1850 rpm : 100 Speed Del.quantity cm3/: -min. 1000 s: 52.0 Speed : 2200 rpm

Remarks:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 290 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEF 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1. Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Testing and adjusting the control-rod-travel sensor with evaluation circuit KDEP-P4CO
Receiving inspection
Shift control lever to full-load stop.
Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.472...2.532 (2.442...2.562) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor
At a speed of 1000 1/min, set fuel delivery at 23.0...24.0 (22.0...25.0) ccm/1000 strokes with control lever.
Shift control-rod-travel sensor until U = 1.633...1.639 (1.635...1.637) V is

indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 2.472... 2.532 V must be attained.

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY -Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

Note remarks

Test sheet

: MB

Edition

: 30.10.92

Replaces

: 08.07.92

Test oil

: ISO-4113

Combination no.

: 0 400 076 996

Injection pump

Pump designation : PES6M55C32ORS155

EP type number

: 0 410 056 997

Governor

Governor design. : RSF315/2309M62

Governer no.

: 0 420 021 035

Cust. part no.

: T4

Customer

Customer-spec, information : MB-PKW

Engine

: 0M603

1st version kW

: 80.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly

: 0 681 343 009

Openina

pressure, bar

: 172...175

Test lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values

Set equal delivery quant.

Insp. values in parentheses

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1-5-3-6-2-4

Phasina

: 0-60-120-180-240-300

Tolerance + - *

: 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed

Spread

rpm: 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 3.1...3.2

100 s: (3.0...3.3)

cm3 : 0.2

100 s: (0.3)

rpm : 290.0 2nd speed

Rack travel in mm: 5.4...5.6

Del.quantity cm3/: 0.5...0.6

100 s: (0.5...0.9) cm3 : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Spread

rpm : 1000

Del.quantity

: 31.5...32.5

1000 : (30.5...33.5)

Spread

: 2.50

cm3 1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7.8...8.2

Speed

Speed

: 2500 rom

4th rack travel in: 2950

rom

: 0.00...1.00

SET IDLE CONTROL LEVER **POSITION**

Speed rpm

: 1000

Rack travel in mm: 0.9...1.0

LOW IDLE 1

Control lever

position degrees: 13...17

NO6

Setting point w/out bumper spring Speed rom : 290 Rack travel in mm : 5.5 Testing: Speed rpm : 220 Minimum rack trave: 7.00 rpm : 290 Speed Rack travel in mm : 5.40...5.60 Rack travel in mm: 1.50 : 620...720 Speed rom Speed : 1000 mom Maximum rack trave: 1.00 SET IDLE AUXILIARY SPRING : 360 COM Rack travel in mm : 4.20...4.40 : (4.10...4.50) TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 11.30...11.40 and speed rpm : 1800 Rack travel in m: 10.90...11.10 2nd speed : 2200 3rd speed rpm Rack travel in m: 10.60...10.80 FUEL DELIVERY CHARACTERISTICS 1st version : 1800 Speed rpm Del.quantity cm3/: 34.0...35.5 1000 s: (33.0...36.5) cm3 : 2.50 Spread 1000 s: (3.00) Speed rpm : 2200 Del.quantity cm3/: 33.5...35.5 1000 s: (32.5...36.5) cm3 : 2.50Spread 1000 s: (3.00) STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 55.0...0.0 1000 s: (55.0...0.0) Rack travel in mm: 20.10...0.00 HIGH IDLE 1st version rpm : 2500 Speed Rack travel in mm : 7.80...8.20 Del.quantity cm3/: 22.0...26.0

1000 s: (21.0...27.0)

cm3 : 2.50Spread 1000 s: (3.00) LOW IDLE Speed rpm : 290
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 5.5...6.5
1000 s: (5.0...9.5) Spread cm3 : 1.00 1000 s: (1.50) SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) Control lever at idle stop : 315 Speed rom Rack travel in mm : (12.6...14.0) Del.quantity cm3/: -1009 s: (32.0...40.0) Current A Control lever at full-load stop Speed : 2950 rpm Rack travel in mm: 0.0...1.0 Current short-duration A: 3,0 Starting test rpm : 100 Speed Del.quantity cm3/: -min. 1000 s: 55.0 / 1.8A min. Remarks: Sliding sleeve pre-travel = 6.5 mm CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam). CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 35,5°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of

starting cam) up to 1000 1/min.

control-rod travel deduction must be greater than 0.2 mm after switchover

-Control-lever position 33.0°,

point (of starting cam).

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1. Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Testing and adjusting the control-rodtravel sensor with evaluation circuit KDEP-P400

Receiving inspection
Shift control lever to full-load stop.
Set 13.5 V at stabilizer. Apply
1850 hPa to ALDA. Run up to speed of
1000 1/min; a voltage of 2,043...2,103
(2,913...2,132) V must be displayed
on the digital voltmeter.

Adjustment of the control-rod travel

At a speed of 1000 1/min, set fuel delivery at 18,0...19,0 (17,0...20,0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until U = 1.633...1.639 (1.635...1.637) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 2.487... 2.547 V must be attained.

Note remarks

Test sheet : FIA : 21.09.92 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 846 599

Injection pump

Pump designation : PES6A90D410RS2817 EP type number : 0 410 896 090

Governor

Governor design. : RQV300...1100AB1262-

Governer no. : 0 420 212 235

Customer-spec. information Customer : IVECO-FIAT

Engine : 8365.25.513

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina .

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 5.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85

: (2.70...2.90)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Toterance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 8.1...8.2

100 s: (7.9...8.4)

Spread cm3 : 0.3

100 s: (6.4)

rpm : 300.0 2nd speed Rack travel in mm: 7.5...7.7 Del.quantity cm3/: 0.8...1.2

100 s: (0.6...1.4)

Spread cm3 : 0.2100 s: (0.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

travel mm : 0.80...1.30 2nd speed rpm : 480

travel ma

: 2.10...2.60

3rd speed rpm : 530

travel mm : 2.60...3.10 4th speed

rpm : 615

travel mm : 3.20...3.70

5th speed rpm : 1150

travel mm : 8.10...8.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1250 Speed

Rack travel in mm : 9.10...11.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 81.5...82.5

1000 : (79.5...84.5)

: 3.00 Spread cm3

1000 : (4,50)

RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 10.40

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1225...1255

4th rack travel in: 1350 Speed rpm: 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 56...74

Testina:

Speed CDM : 200 Minimum rack trave: 8.40

rpm : 300

Rack travel in mm : 7.50...7.70

CONSTANT REGULATION

nom : 425...575 Speed

TORQUE CONTROL

Dimension a mm : 0.80

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.30...11.40

2nd speed rpm : 500

Rack travel in m: 12.10...12.20

3rd speed rpm : 880

Rack travel in m: 11.80...12.00

4th speed rpm : 990

Rack travel in m: 11.40...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700

Del.quantity cm3/: 84.0...86.0 1000 s: (81.5...88.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.40

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rom : 100

Del.quantity cm3/: 159.0...169.0 1000 s: (156.0...172.0)

Rack travel in mm: 19.50...21.00

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

lest sheet : MWM

Edition : 23.10.92

Replaces

Test oil : ISO-4113

Combination no. : 0 400 864 094

Injection pump

Pump designation : PES4A90D320/3RS2743

EP type number : 0 410 894 034

Governor

: RSV325...1150A5c505-Governor design.

5R

: 0 420 233 289 Governer no.

Customer-spec. information : 19414

Customer

: TD226B-4 Engine

1st version kW : 63.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

Phasing : 0-90-180-270

Tolerance + - * : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00

& maximum rack tra: 21.00 Difference * CS : 3.50...4.50

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 9.50...9.60

Del.quantity cm3/: 7.1...7.2

100 s: (6.9...7.4)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm: 6.7...6.9 Del.quantity cm3/ : 0.9...1.5

100 s: (0.7...1.7)

cm3 : 0.2

Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

: 71.5...72.5 Del.quantity

1000 : (69.5...74.5)

: 3.00 Spread cm3

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Testing: 1st rack travel in: 8.50 Speed rpm : 1190...1200 2nd rack travel in: 4.00 rpm : 1210...1240 Speed 3rd rack travel in: 4.00 Speed rpm : 1240...1270 4th rack travel in: 1330 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 66...74 Setting point wout bumper spring rpm : 325 Speed Rack travel in mm: 6.3 Testina: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 325 Rack travel in mm : 6.70...6.90 Rack travel in mm : 2.00 Speed rom : 430...490 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 9.50...9.60 2nd speed rpr. : 500 Rack travel in m: 9.50...9.70 FUEL DELIVERY CHARACTERISTICS 1st version rom: : 500 Speed Del.quantity cm3/: 52.0...54.0 1000 s: (49.5...56.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.50 Speed rom : 1190...1200 STARTING FUEL DELIVERY

.

APPLICATION

Excavator

N12

Remarks:

Note remarks

Test sheet : MMM 6,2 e 6
Edition : 23.10.92

Replaces : 05.90 Test oil : ISO-4113

Combination no. : 0 400 866 122

Injection pump

Pump designation : PES6A90D320/3RS2660

EP type number : 0 410 896 078

Governor

Governor design. : RSV325...1200AUC2182

-3R

Governer no. : 0 420 233 212

Customer—spec. information Customer : MW4

Engine : TD2268-6

1st version kW : 123.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 909

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05

: (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : -1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00

Difference * CS : 3.50...4.50

BASIC SETTING

1st speed rpm: 1180

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 8.9...9.0

100 s: (8.7...9.2)

Spread cm3: 0.3

100 s: (0.4)

2nd speed rpm : 325.0 Rack travel in mm : 7.1...7.3

Rack travel in mm : 7.1...7.3 Del.quantity cm3/ : 1.0...1.6

100 s: (0.8...1.8)

Spread cm3: 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1180

Aneroid pressure h: 700

Del.quantity : 89.0...90.0

1000 : (87.0...92.0)

Spread cm3 : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever position degrees: 90...98

Testina:

1st rack travel in: 10.60

rpm : 1220...1230 Speed

2nd rack travel in: 4.00

rpm : 1240...1270 Speed

3rd rack travel in: 4.00

rpm : 1260...1290 Speed

4th rack travel in: 1435

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 63...71

Setting point w/out bumper spring

Speed rpm : 325 Rack travel in mm: 6.7

Testing:

Speed rpm : 100 Minimum rack trave: 19.50

Speed rpm : 325

Rack travel in mm : 7.10...7.30

Rack travel in mm: 2.00

Speed rpm : 485...545

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1180

Rack travel in m: 11.60...11.70 od speed rpm : 700

2nd speed rpm

Rack travel in m: 12.40...12.50

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 hPa : 700 Speed rem Pressure

Rack travel mm : 12.40...12.50

Measurement

Speed $1/\min : 500$

1st pressure hPa : -

Rack travel in m: 10.40...10.50

2nd pressure hPa : 320

Rack travel in m: 11.80...11.90

3rd pressure hPa : 180

Rack travel in m: 11.00...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

: 700 Speed rpm

Del.quantity cm3/: 93.0...95.0 1000 s: (90.5...97.5)

Ameroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 61.0...62.0

1000 s: (59.0...64.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60

Speed rpm : 1220...1230

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 128.0...138.0

1000 s: (125.0...141.0)

Rack travel in mm : 19.50...21.00

Remarks:

APPLICATION

Tractor (tractor engines)

Note remarks

Test sheet : CUM

Edition : 23.10.92

Replaces : -

Test oil : ISO-4113

Combination no. : 0 400 866 178

Injection pump

Pump designation : PES6A1000320/3RS2691

EP type number : 9 410 230 025

GOVERNOR

Governor design. : RSV550...1100A0c2190

-56R

Governer no. : 0 420 233 295

Customer—spec. information Customer : C.D.C.

Engine : 6CTA-830

1st version kW : 157.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm

: 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - *

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 12.3...12.5

100 s: (12.1...12.7)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 550.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 123.0...125.0

1000 : (121.0...127.0)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 11.70

rpm : 1165...1175 Speed

2nd rack travel in: 4.00

: 1225...1235 Speed rom

3rd rack travel in: 4.00

rpm : 1225...1255 Speed

4th rack travel in: 1400

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control Lever

position degrees: 25...33

Setting point w/out bumper spring

: 550 COM Rack travel in mm: 5.2

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

: 550 Speed man

Rack travel in mm : 5.60...5.80

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 1165...1175 Speed

STARTING FUEL DELIVERY

Speed : 100 הוסח

Del.quantity cm3/: 135.0...155.0

1000 s: (130.0...160.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

: 550 Speed rpm

Rack travel in mm : 5.60...5.80

Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5) Spread

cm3 : 6.001000 s: (8,00)

Remarks:

: C.D.C. # 3923480

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Note remarks

Test sheet : LIE 5,6 a15 Edition : 23.10.92

Replaces : 02.92 Test oil : ISO-4113

Combination no. : 0 400 874 238R

Injection pump

Pump designation : PES4A95D41ORS2685 EP type number : 0 410 894 996

Governor

Governor design. : RSV400...1000A1C2187

Governer no. : 0 420 232 387

Customer—spec. information Customer : LIEBHERR

Engine : D904 T

1st version kW : 90.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80

: (2.65...2.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - * : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00

Difference * CS : 4.00...5.00

BASIC SETTING

1st speed rpm: 975

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 11.9...12.1

100 s: (11.7...12.3)

Spread cm3: 0.3

100 s: (0.6)

2nd speed rpm : 415.0

Rack travel in mm : 6.6...6.8 Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3: 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 975

Del.quantity : 119.0...121.0 1000 : (117.0...123.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 90...98

Testing: 1st rack travel in: 11.20 Speed rpm : 1020...1030 2rd rack travel in: 4.00 Speed rpm : 1030...1060 3rd rack travel in: 4.00 Speed rpm : 1070...1090 4th rack travel in: 1230 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 65...73 Setting point w/out bumper spring Speed rpm : 415 Rack travel in mm: 6.2 Testing: rpm : 100 Speed Minimum rack trave: 19.50 Speed rpm : 415 Rack travel in mm : 6.60...6.80 Rack travel in mm: 2.00 Speed rpm : 535...595 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 975 Rack travel in m: 12.20...12.30 2nd speed rpm : 500 Rack travel in m: 12.80...13.00 3rd speed rpm : 800 Rack travel in m: 12.80...13.00 4th speed rpm : 900 Rack travel in m: 12.40...12.60 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 500 Speed Del.quantity cm3/: 114.0...120.0 1000 s: (111.5...122.5) Speed : 800 rom Del.quantity cm3/: 125.5...128.5 1000 s: (123.0...131.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.20 Speed rpm : 1020...1030 STARTING FUEL DELIVERY

Speed

N18

man

: 100

Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm: 19.50...21.00

LOW IDLE

Speed rpm : 415
Rack travel in mm : 6.60...6.80
Del.quantity cm3/: 17.0...21.0
1000 s: (14.5...23.5)
Spread cm3 : 3.50

1000 s: (5.50)

:

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.50...2.60 : (2.45...2.65) Prestroke mm Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2 Note remarks Test sheet : KI & Edition : 30, 10, 92 Replaces Test oil : ISO-4113 Phasing : 0-90-180-270 Combination no. : 0 400 874 253 Tolerance + - * : 0.50 (0.75) Injection pump BASIC SETTING Pump designation: PES4A85D410/3RS2799-1st speed rpm : 1050 : 0 410 884 941 EP type number Governor Rack travel in mm : 11.50...11.60 Governor design. : RSV325...1150A8c2239 -6L Del.quantity cm3/ : 7.9...8.0 Governer no. : 0 420 232 582 100 s: (7.7...8.2) Customer-spec. information Customer : KHD Spread cm3 : 0.3: BF4L913 Engine 100 s: (0.5) 1st version kW : 70.0 rpm : 325.02nd speed Rated speed : 2300 Rack travel in mm: 7.5...7.7 Del.quantity cm3/: 1.2...1.8 TEST BENCH REQUIREMENTS 100 s: (1.0...2.0) Spread cm3 : 0.2Test oil 100 s: (0.4) inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Overflow valve Control-lever position : 1 419 992 198 Degree: -3 Speed rpm : 800 Inlet press., bar: 1.50 Rack travel in mm : 0.30...0.70 Test nozzle holder Governor spring pre-tension : 0 681 343 009 assembly Click setting x : 4.25**Opening** FULL LOAD DELIV. AT FULL LOAD STOP : 172...175 pressure, bar 1st version Speed rpm : 1050 Test Lines : 1 680 750 014 : 79.5...80.5 Del.quantity 1000 : (77.5...82.5) Outside diameter cm3 : 3.00 Spread x Wall thickness 1000 : (5.00) : 6.00x2.00x600 x Length mm RATED SPEED (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Control lever per values position degrees: 97...105 BEGINNING OF DELIVERY Testing: Test pressure, bar: 25...27 1st rack travel in: 10.50 rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1120...1150 Speed 3rd rack travel in: 4.00 rpm : 1145...1175 Speed 4th rack travel in: 1330 Speed rpm : 0.30...1.40 LOW IDLE 1 Control Lever position degrees: 66...74 Setting point w/out bumper spring Speed rpm : 325 Rack travel in mm : 7.1 Testing: Speed mpm : 100 Minimum rack trave: 19.50 rpm : 325 Rack travel in mm: 7.50...7.70 Rack travel in mm: 2.00 Speed riom : 435...495 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 11.50...11.60 2nd speed rpm : 730 Rack travel in m: 12.10...12.20 3rd speed rpm : 885 Rack travel in m: 11.70...11.90 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 730 Del.quantity cm3/ : 79.0...8%.0 1000 s: (76.5...83.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.50 rpm : 1090...1100 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm : 17.60...18.00 Remarks: **APPLICATION** Excavator

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : STE 12,0 h : 23.10.92 : 07.91 Test sheet Edition Replaces Test oil : ISO-4113 Combination no. : 0 401 838 709 Injection pump Pump designation : PE8P110A120LS3271 EP type number : 0 411 818 723 Governor Governor design. : RQV250...1100PA951-2 : 0 421 813 908 Governer no. Customer spec, information : HAEP Customer Engine : WD815.66 1st version kW : 270.0 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Openina . pressure, bar : 172...175 Test Lines : 1 680 750 015 Outside diameter x Wall thickness

: 6.00x1.50x600

: 2.80...2.90 : (2.75...2.95)

(A) Injection pump setting values

Set equal delivery quant.

Rack travel in mm : 9.00...12.00

Insp. values in parentheses

Phasina : 0-45-90-135-180-225-270-315 : 0.50 (0.75) Tolerance + - ° Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1100 Rack travel in mm : 13.40...13.50 Del.quantity cm3/: 17.4...17.6 100 s: (17.1...17.9) cm3 : 0.4Spread 100 s: (0.7) 2nd speed rpm : 250.0 Rack travel in mm: 4.1...4.3 Del.quantity cm3/ : 1.7...2.3 100 s: (1.5...2.5) cm3 : 0.4 Spread 100 s: (0.7) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 250 1st speed : 0.90...1.30 travel mm 2nd speed : 485 rpm : 3.20...3.80 travel mm 3rd speed rom : 640 : 4.20...4.80 travel mm rpm : 1145 4th speed : 8.40...8.60 travel mm 5th speed : 1220 rpm : 9.80...10.20 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1130 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1100 Aneroid pressure h: 1200 Del.quantity : 1/4.0....179.0)

Firing order

: 1- 5- 4- 8- 6- 3- 7- 2

x Length mm

Prestroke mm

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00 Spread cm3 1000 : (7,50)

RATED SPEED

1st version Control lever

position degrees: 114...122

Testing:

1st rack travel in: 12.40 rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1210...1240 Speed 4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: ?

Testing:

Speed rpm : 100 Minimum rack trave: 4.60 Sped rrm

Rack travel in mm : 4,10...4.30

CONSTANT REGULATION

rpm : 250...390 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 13.40...13.50

2nd speed rpm : 600

Rack travel in m: 13.40...13.60

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom hPa : 1200 Pressure

Rack travel mm : 13.40...13.50

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.10

2nd pressure hPa : 600

Rack travel in m: 12.50...12.60 3rd pressure hPa : 380 Rack travel in m: 10.40...10.60

START CUT-OUT

Speed $1/\min$: 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed : 600 rpm

Del.quantity cm3/: 186.0...190.0

1000 s: (183.0...193.0)

Aneroid pressure h:

Speed rpm : 500 Del.quantity cm3/ : 117.0...119.0

1000 s: (114.0...122.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 220.0...260.0

1000 s: (215.0...264.0)

Rack travel in mm : 20.00...21.00

Remarks:

Note remarks

Test sheet : KHD 19,2 a4 Edition : 09.06.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 766

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQV475...1075PA907-1

Governer no. : 0 421 813 739

Customer-spec. information Customer : KHD

Engine : BF12L513C

1st version kW : 333.0 Ratted speed : 2150

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9- 8- 5- 211-10-3-6-7-12

Phasing : 0-15-60-75-120-135-

180-195-240-255-300-

315

: 0.50 (0.75)Tolerance + - *

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1075

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 13.4...13.6

100 s: (13.2...13.8)

Spread cm3 : 0.5

100 s: (0.8)

2nd speed rpm : 475.0 Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.5)

Spread cm3 : 0.7100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 475 : 1.10...1.50 travel mm

2nd speed rpm : 650

travel mm : 3.40...4.00

3rd speed rpm : 950

travel mm : 5.60...6.20

4th speed : 1100 rpm

travel mm : 7.70...7.90

: 1150 5th speed rpm

travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1075

Del.quantity : 134.0...136.0

1000 : (132.0...138.0)

cm3 : 5.00 Spread 1000 : (8.00)

RATED SPEED

1st version Control lever

position degrees: 49...57

Testing:

1st rack travel in: 10.70

rpm : 1095...1105 Speed

2nd rack travel in: 4.00

rom : 1135...1165 Speed

4th rack travel in: 1250

Speed rom : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 20...28

Testing:

Speed rpm : 100 Minimum rack trave: 8.20 nom : 475

Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

Speed rom : 475...640

TORQUE CONTROL

: 0.60 Dimension a mm

Torque control curve - 1st version

rpm : 1075 1st speed

Rack travel in m: 11.70...11.80

rpm : 800 2nd speed

Rack travel in m: 12.30...12.50

3rd speed rpm : 950

Rack travel in m: 11.90...12.10

START CUT-OUT

1/min: 395 (415) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800

Del.quantity cm3/: 143.0...147.0 1000 s: (141.0...149.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.70

rpm : 1095...1105 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 135.0...165.0 1000 s: (131.0...169.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAN Edition : 21.06.91 Replaces Test oil : ISO-4113 Combination no. : 0 401 840 770 Injection pump Pump designation: PE12P120A520/4LS3854 El^o type number : 0 411 820 728 Governor Governor design. : RQ750PA947-1 Governer no. : 0 421 801 587 Customer-spec. information Customer : MAN Engine : D2842LE 21 1st version kW : 443.0 : 1500 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 019 Opening. pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

: 4.20...4.30 Prestroke mm : (4.15...4.35) Rack travel in mm : 9.00...12.00 Firing order : 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7 Phasing : 0-45-60-105-120-165-180-225-240-285-300-Phasina : 345 Tolerance + - * : 0.50 (0.75)Time to cyl. no. : 12 BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 13.00...13.10 Del.quantity cm3/: 25.0...25.2 100 s: (24.7...25.5) Spread cm3 : 0.6100 s: (1.0) rpm : 300.0 2nd speed Rack travel in mm: 4.4...4.6 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) Spread cm3 : 1.0 100 s: (1.4) FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700: 250.0...252.0 Del.quantity 1000 : (247.0...255.0) : 6.00 Spread cm3 1000 : (10.00) RATED SPEED 1st version Testing: 1st rack travel in: 12.00 rpm : 750...755 Speed 2nd rack travel in: 4.00 : 790...803 Speed LDW 4th rack travel in: 950 Speed rpm : 0.00...1.00

: MAN-NR. 2-7981

Remarks:

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

APPLICATION

Generator set

Note remarks

Test sheet : PEN 12,2 a : 23.10.92 Edition : 02.88 Replaces

: ISO-4113 Test oil

Combination no. : 0 401 846 882

Injection pump

Pump designation : PE6P120A320RS3206-1

EP type number : 0 411 826 775

Governor

Governor design. : RQ750PA783-1 Governer no. : 0 421 801 432

Customer-spec, information

: VOLVO-PENTA Customer

: TAMD 122 A Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 30.9...31.1

100 s: (30.6...31.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm : 4.9...5.1

Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.5Spread

100 s: (0.8)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

mpta : 700 Sceed

: 309.0...311.0 Del.quantity

1000 : (306.0...314.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 11.70 Speed rpm : 747...752 2nd rack travel in: 4.00

rpm : 774...789 Speed

4th rack travel in: 850

Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 747...752 Speed

Remarks:

APPLICATION

Generator set